Essays on Enterprise Social Media: Moderation, Shop Floor Integration and Information System Induced Organizational Change

Von der Wirtschaftswissenschaftlichen Fakultät
der Gottfried Wilhelm Leibniz Universität Hannover zur Erlangung des Grades

Doktor der Wirtschaftswissenschaften
Dr. rer. pol.

genehmigte Dissertation
von

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geboren am 29. Juni 1988 in Hannover

2022

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Tag der Promotion:	21.10.2022

„Für meine Familie, Freunde und Kollegen. Danke.“

Abstract

The digital transformation increases the pressure on innovation capabilities and challenges organizations to adapt their business models. In order to cope with the increased competitiveness, organizations face two significant internal challenges: Enabling internal digital collaboration and knowledge sharing as well as information system-induced change. This dissertation will investigate seven related research questions divided in two main parts. The first part focuses on how an organization can foster digital knowledge exchanges and collaboration in global organizations. Enterprise social media has attracted the attention of organizations as a technology for social collaboration and knowledge sharing. The dissertation will investigate how organizations can moderate the employee discourse in such platforms from a novel organizational perspective and provide insights on how to increase the encouragement for employees to contribute and assure content quality. The developed framework will provide detailed moderation approaches. In addition, the risk of privacy concerns associated with organizational interference in the new digital collaboration technologies are evaluated. The second part of the dissertation shifts the focus to the shop floor environment, an area that has faced substantial digital advancements. Those advancements change the organizational role of the shop floor to a more knowledge work-oriented environment. Firstly, a state of research regarding technology acceptance and professional diversity is presented to create an enterprise social media job-characteristic framework. Further, a unique and longitudinal shop floor case study is investigated to derive organizational challenges for enterprise social media and potentials for empowerment. To validate the future shop floor environment needs use cases for the shop floor are derived and a user profile established. The case study is extended by expert interviews to focus on conceptualizing organizational information systems-induced change. In this regard, the role of work practices, organizational and employee mindset and information system change are integrated into a holistic organizational change model that targets employee empowerment. This dissertation provides a comprehensive overview of enterprise social media from an organizational management and shop floor perspective. It contributes to understanding new digital needs at the shop floor and the information systems-induced change journey towards digital employee empowerment.

Keywords: ESM, shop floor, digital transformation, privacy concerns, organizational change, digital empowerment

Management Summary

Organizations are currently investing heavily into the digital transformation of their business and internal processes and trying to automate their manufacturing processes. The recent lockdowns during the Covid 19 pandemic have made it obvious that organizations require good internal collaboration and communications technologies to maintain their information flow, while supporting the essential social exchanges of their employees. Since their emergence in 2006, to facilitate social exchanges and knowledge sharing, organizations have implemented enterprise social media (ESM) platforms with Web 2.0 features as social information systems (IS). Web 2.0 is mainly consumer market driven and managing such platforms in an organizational context is new. To harvest all benefits, organizations need strategies to apply to such new crowd-based technologies and understand how organizational management of such services can affect the intended benefits. Next to the challenge of managing new platforms, the change in management that such technologies demand is a unique challenge. Such systems provide employee empowerment. Considering the advancing automation in manufacturing and the ongoing reduction of clerical and manual labor jobs, a conversion of priory unempowered workers into empowered process knowledge providers is required. This change accompanied by new technologies such as ESM are applied to new employee groups. The objective of this dissertation is to provide insights into ESM itself from an organizational angle and to investigate the change process that such technologies induce in the digital transformation process, as illustrated in Figure 1.

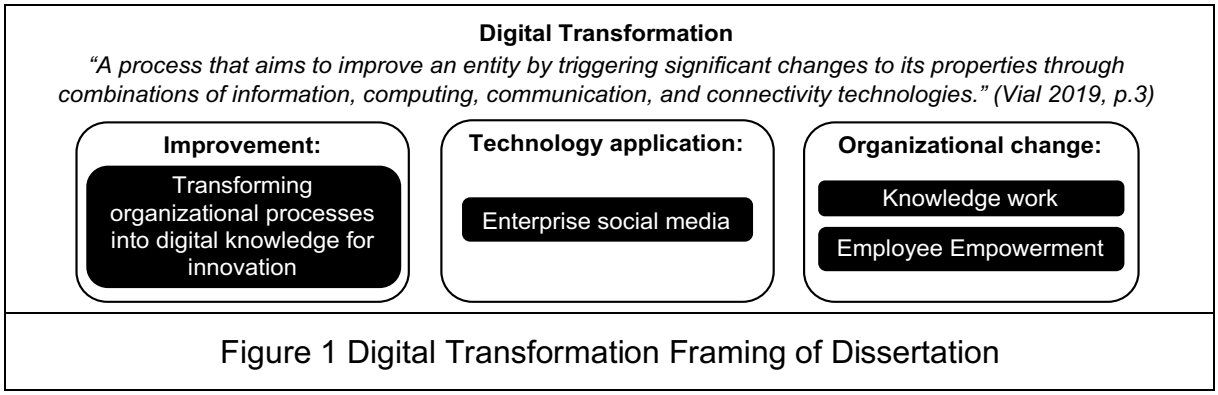

Figure 1 Digital Transformation Framing of Dissertation

The dissertation starts with an introduction setting up the research gaps described in the two major chapters. The first part provides insight on ESM from the perspective of organizational moderation to understand how an organization can extract the benefits associated with it. This is done through two complimentary literature reviews that provide a comprehensive and novel ESM moderation model, including survey-based

validation of the major critique points for organizational interference into crowd-based web 2.0 technology. After understanding how to most beneficially apply the technology, the second part of this dissertation focuses on organizational changes connected through the application of new technology. After a comprehensive literature review cementing the gap regarding the lack of professional diversity in IS research, a case study is conducted on a shop floor area, which one of the areas majorly affected from a digital transformation and is a neglected area of research. This dissertation will take the reader on a journey of digital transformation of a multinational organization that is attempting through digital tools to achieve more employee empowerment and transform its shop floor into a future knowledge work environment. This journey will be told from the perspective of shop floor workers (SFWs) through collected interview data and through the lens of organizational experts to provide a holistic understanding of IS-induced changes.

Chapter 2. The second Chapter describes a structured approach to achieving successful ESM management from an organizational perspective. Starting from the basis of two main ESM success factors on how to achieve user contributions and improve the content quality to legitimize ESM in comparison to established organizational information and communication technology (ICT), an ESM moderation concept is developed. Based on an organizational moderation usage context, depended moderation approaches are defined that help to encourage employees to contribute high-quality content throughout different use case scenarios and maturity phases of ESM management. The main ESM barrier of privacy concerns that might be triggered through organizational moderation is addressed through two survey studies, the results of which found that privacy concerns require active management through organizational policies and the recognition of national cultural differences. ESM moderation and the management of ESM privacy concerns together can provide a successful ESM management and foster collaboration and digital knowledge sharing within an organization.

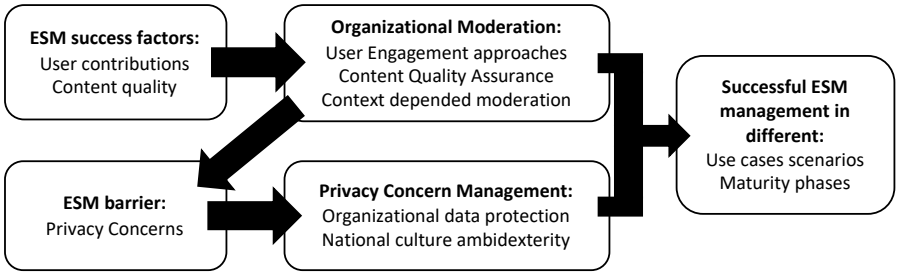

Figure 2 Research path and outcomes of Chapter 2

Organizations are applying ESM to engage their employees in open and digital intraorganizational knowledge exchange. Although there has been a significant amount of research conducted on why employees use or do not use such technologies and how ESM benefits an organization, prior research has failed to connect those two areas in a structured manner. With the help of two complimentary literature reviews conducted by Nolte *et al.* (2017) and Nolte, Guhr, Breitner, et al. (2019), regarding ways to engage employees in the use of ESM and assure a certain level of content quality, an organizational perspective is assumed. First, the literature review conducted by Nolte *et al.* (2017) identifies three moderation approaches and ranks them based on organizational interference and encouragement to contribute content. The categories of corporate supervision, employee sales-organization, and corporate guidance approaches were defined during the literature review, which was necessary due to a lack of prior research categories for ESM moderation. As the main takeaway from this initial study, organizational moderation is necessary in an organizational context and is therefore recommended. The discussion of the approaches in an organizational context also provided a clear ranking of content encouragement, providing an initial correlation of the chosen organizational interference level and allowing user-generated content to be produced. The findings of these theses were presented at Hawaiian Conferences of Information Systems, which triggered a scientific discourse regarding the missing dimensions within this framework. How do these approaches relate to the quality of the user content, challenging the concepts of content output and focusing on the importance of ESM moderation. Consequently, the study was extended by a second complementary literature review conducted by Nolte, Guhr, Breitner, et al. (2019) that unfolded a significant research gap for ESM content quality assurance. This study added quality assurance approaches to content localization, content motivation, content control, and no content control, and their operationalization through content quality metrics. Because the literature in this area is scarce, it was necessary to transfer metrics from public social media to the ESM context. The findings showed that content quality assurance is positively bi-directionally correlated with corporate supervision (content control) and corporate guidance (content localization and motivation). The fundamental difference is the manner of conducting a centralized quality control or an approach to guiding users to identified quality content or motivate them to provide quality content through gamification and the concept of reputation. The metrics used to achieve quality assurance are the status quo of the practical solutions mentioned in

the research, and are assigned to each of the quality assurance approaches based on their nature. As an important practical finding, companies need to be knowledgeable about how certain metrics can be perceived as a type of control. The study concludes that organizations need to have situational awareness to successfully moderate an ESM. There is not just one approach that an organization should apply because different organizational usage scenarios demand more control or a higher degree of freedom. The situational awareness requires ambidexterity based on the ESM moderation capabilities of the organization. Figure 2 summaries the initial basic model developed and the enhanced ESM moderation concept, which provides a holistic ESM moderation assessment.

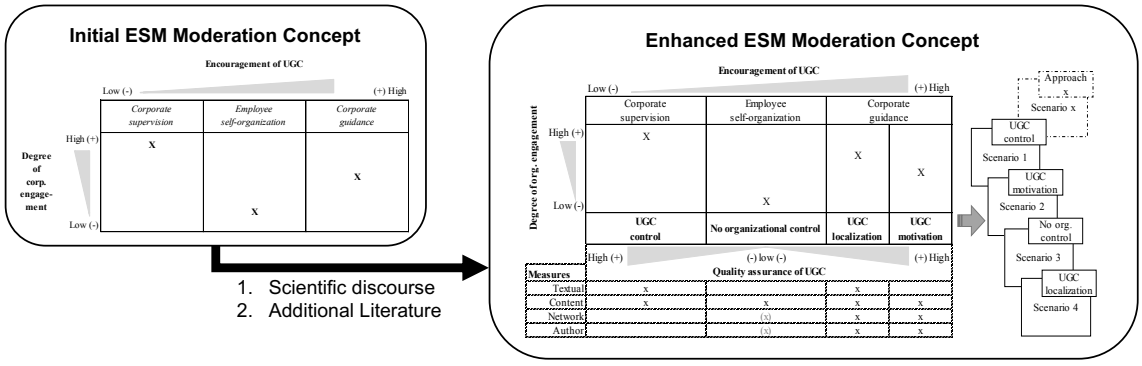

Figure 3 Summary of evolution of moderation concept

One of the main limitations of ESM moderation is the risk of reduced usage owing to privacy concerns of the employees, which originate from perceiving organizational interference as a control or monitoring of ESM user activities. The first ESM study focused on utilizing a research model relating privacy concerns with perceived risk and trust constructs that influence the technology acceptance construct of intention to use. The study additionally uses the big-five personality traits, to validate any moderating effects on the intention to use. The basis of the study is a quantitative survey that applied to evaluate the research model through structural equation modeling. The results of the study show that, as expected, privacy concerns negatively influence the ESM usage intentions. The expected negative influence on the perceived trust and higher perception of perceived risk through privacy concerns is shown. However, the model surprisingly found that perceived risk and trust do not significantly influence the intention to use. The study concludes that the organizational environment with its policies and governance mechanisms has an influence on the perceived risk and trust of the employees. Therefore, it is extremely important for organizations to nurture a

transparency and trustworthiness in regard to personal data protection that can help to mitigate the impact of general privacy concerns in an organizational setting. As the final finding of the study, personality traits do not moderate the intention to use in regard to privacy concerns. This clearly emphasizes again that the organizational context has an impact on prior public social media research findings, suggesting that with its unique intra-organizational safe space, different rules apply to ESM in regard to privacy concerns.

The second study on privacy concern focuses on bring your own device (BYOD) usage, which is often applied by organizations to allow their employees more flexible work arrangements and to allow them to use applications such as ESM on their private devices. To minimize security risks from granting organizational access on private devices, organizations often demand the ability to manage such devices. Such mobile device management grants an organization access to personal data and limits the degree of freedom of device usage. To derive practical relevance and understand how organizations deal with such a solution, two case studies are described. The first finding shows that organizations try to reduce potential privacy concerns through data protections agreements and restricted usage of personal data. Based on the fact that organizations are dealing with privacy concerns in the implementation of BYOD solutions, a research model consisting of BYOD benefits and risks that influence the employee attitudes of BYOD was developed, which will ultimately influence the usage intension of BYOD. To test the model, a three-nation survey was initiated to test the model through structural equation modeling. The findings show that for all nations, privacy concerns significantly influence the risk perception, and with it, negatively affect the attitude toward BYOD and ultimately make it unlikely that employees will use this solution. More interestingly, the differences in national samples showing that the USA places a higher importance on risk perception, whereas the German and South Korean samples empathize more the importance of the benefits when it comes to building a particular attitude. To make sense of the differentiated sample findings, they are related to the Hofstede cultural dimensions. Particularly for multinational companies, the study shows that management needs to address privacy concerns differently based on the country, similar to the focus on communication, in which the USA emphasizes risk reduction and Germany emphasizes benefit campaign.

Chapter 3. In the third chapter, this dissertation addresses two main themes of digital change induced by ESM: the impact of professional diversity on technology acceptance and the organizational change induced by technology. This chapter starts with a comprehensive literature review of technology acceptance and the influence of professional diversity. This is of particular interest as ESM unfolds its overall benefits when applied throughout the entire organization, and thus understanding the impact of professional diversity is crucial for an organization. This review identified a research gap, showing that there are only a few dedicated studies on shop floors within the IS research domain, and thus far, none have described the digital change journey for the SFWs. The dissertation conducts a case study with semi-structured interviews of SFWs, shedding light on the digital changes happening with the insertion of ESM into the shop floor. The study derives shop floor use cases, as well as the need for changes of the shop floor itself, and derives an ESM shop floor use profile. After the descriptive part of the case study, the study is evaluated through the theoretical lens of technological frames and extended by interviews of organizational experts to evaluate the underlying process of change. The conceptualization of IS-induced change as multi-layer and longitudinal change provides the research pinnacle of this chapter of the dissertation.

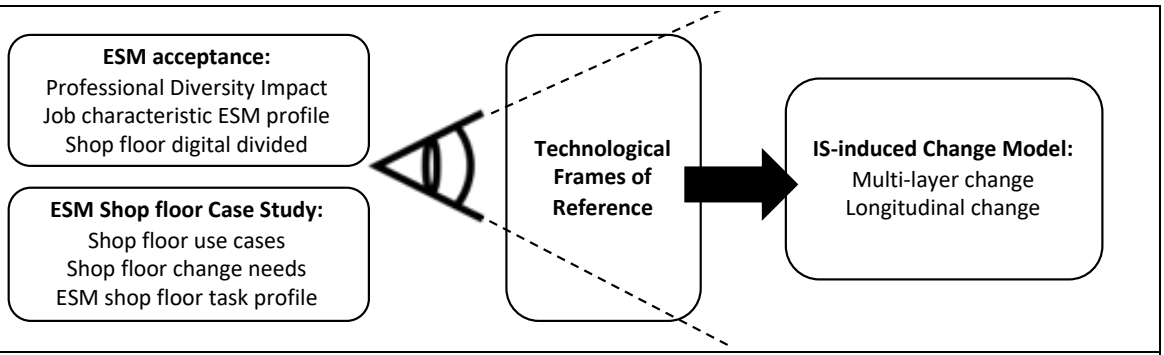

Figure 4 Course of research of Chapter 3

Starting with a literature review of cross-research domain, Chapter 3.1 shows that the task characteristics play an important role on how users perceive the usefulness of technology while on the job. Second, occupational culture is associated with influencing how employee groups perceive a certain technology, deeming it fitting or not for their profession. Interestingly, the study found that occupational groups share to a certain extent certain personality traits. Hence, professional diversity (task characteristics, occupational culture, and personality traits) can be a challenging factor for the implementation of ESM, a technology designed for knowledge work. As a result of such

findings, in this study, an initial ESM professional diversity fit assessment was designed, focusing on the degree of task unstructuredness, degree of openness in the occupational cultures and the degree of extraversion among personality traits. Linking it to the properties of ESM, a best fit exists for occupational groups with highly unstructured tasks, an open culture, and in which no members are introverted. Because the adoption rates for work-related use may differ, this is particularly relevant for the management of expectations when implementing ESM in different organizational areas.

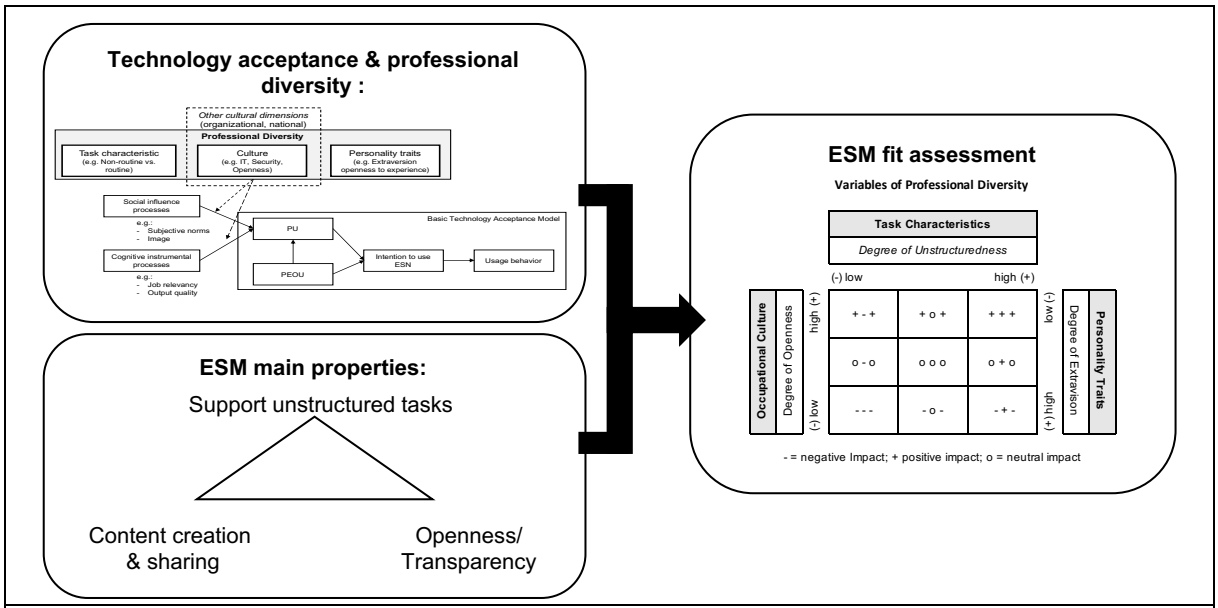

Figure 5 Summary of professional diversity, technology acceptance, and ESM fit

More interestingly, as in the past, in which an intra-organizational digital divide paradigm neglected this user group, the study showed a lack of research in the shop floor area. However, with the changing shop floor environment, the digital transformation is converting the shop floor significantly into a more knowledge work oriented environment, resulting in an interesting research gap that the dissertation explores in Chapter 3.2 with a shop floor case study. This case study examines an international automotive supplier that is trying to expand it in 2010 started “workplace of the future” program to the shop floor environment. The study provides unique insights through interviews with SFWs and organizational experts. The study is framed within the ongoing empowerment of SFWs by the changing job environment and explores how ESM fits into the pursuit of greater empowerment. The study produces first an overview of shop floor use cases that are categorized by an active or passive ESM interaction mode, the potential empowerment, ESM features, and worker task profiles (high, medium, and low skilled). The use cases provide the first instances of ESM as a structural empowerment enabler. However, three challenges or future required changes were identified:

“supporting organizational conditions for ESM use,” “work-centric shop floor user interface designs,” and “empowerment and ESM education needs.” These challenges, together with the use cases, build the basis for the synthesis of an ESM SFW profile. The profile provides clear guidance on how to implement ESM at the shop floor level, combining identified critical success factors of a shop floor, interaction scenarios with the SFW task profiles that will allow ESM to be used on the shop floor, and a digital empowerment for this often neglected user group.

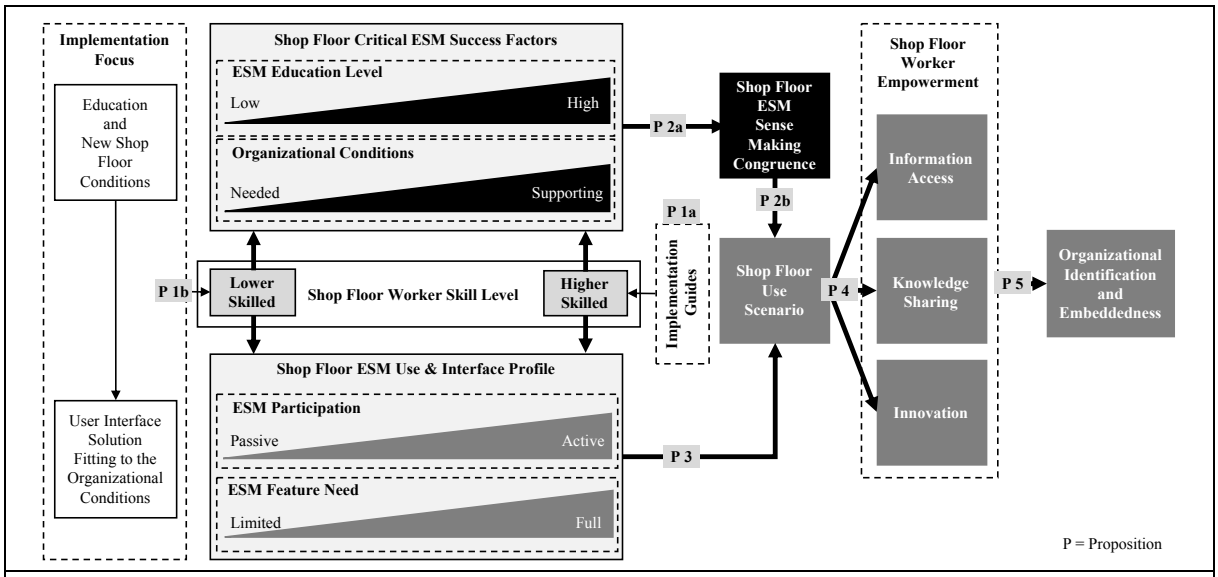

Figure 6 Summary of ESM shop floor profile results

The viewpoint of this study was originally limited to SFWs and was consequently expanded through organizational experts to provide a holistic view on the overall organizational change process of the case study. The study was extended by utilizing the theoretical lens of technological frames. With the help of such a framework, the study mapped out the differences between SFWs, highlighting that the shop floor is a heterogenous work environment and that such workers are in different stages of their digital empowerment process. The higher skilled workers showed a clear understanding and need for IS in their evolving workspace, demanding new ways to engage with the rest of the organization, whereas the lower skilled workers did not fully comprehend the technology or its necessity. However, after some education on ESM, the lower skilled workers also increased their desire to engage in knowledge sharing. At this different stage of digital transformation, the organizational experts were prompted to add their viewpoint. The experts related to the SFWs but described a broader organizational picture of a mindset change that needs time to unfold. Combining the findings from the

expert interviews with the viewpoints of the SFWs allowed a unique holistic organizational change assessment to occur. The change process that was initiated by the insertion of IS onto the shop floor produced a chain of events that incrementally advanced the organization by changing the IS, work practices, and mindset of the organizational members. These three identified dimensions or layers of change need to be passed overtime, where each of the dimensions affects the others and could also be the initiation of change. This conceptualization of IS-induced change as a type of longitudinal multi-layer change helps with understanding change as multi-stop journey that continuously and in a step-by-step manner assists organizations in evolving each frame of reference until a state of congruence is achieved that allows for the change to occur.

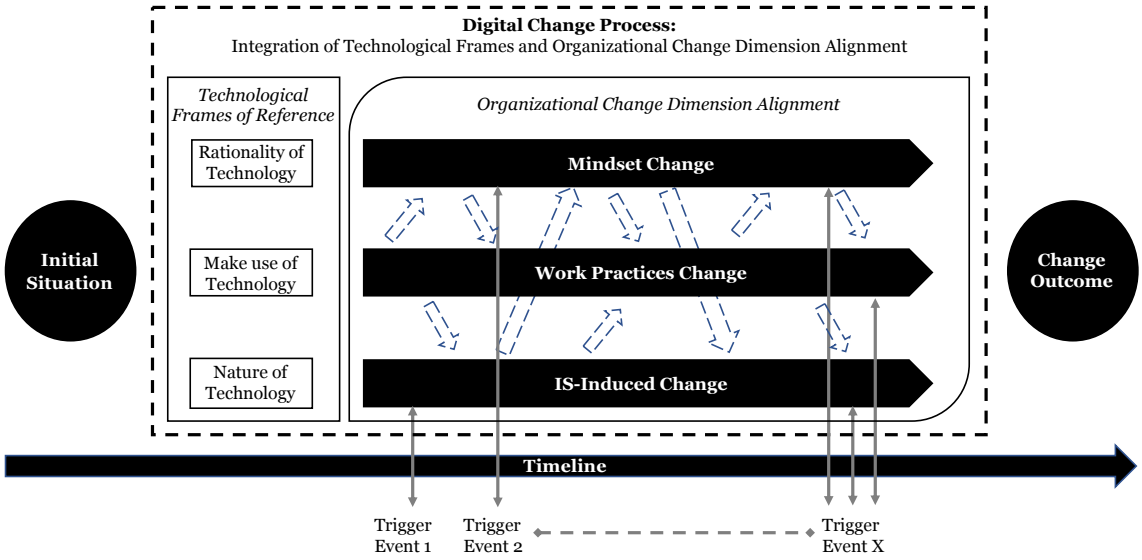

Figure 7 Model of interrelations of IS-induced change based on Nolte *et al.* (2020)

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List of Abbreviations

AWAR	Awareness of Privacy Practices
BFI-S	Big Five Inventory Inventory-SOEP (BFI-S)
BYOD	Bring Your Own Device (BYOD)
DT	Digital Transformation and Change Manager (DT)
e.g.	exempli gratia / for example
ESM	Enterprise Social Media
ESN	Enterprise Social Networks
et al.	*et al.* et alia
HS	Head of Shop Floor Development
HTMT	Heterotrait-monotrait Ratio of Correlations
i.e.	i.e. id est / that is to say
ICT	Information and Communication Technology
INTR	Perceived Intrusion
IS	Information System
IT	Information Technology
IUIPC	Internet Users' Information Privacy Concerns
MDM	Mobile Device Management
MUIPC	Mobile Users' Information Privacy Concerns
p.	Page
PEOU	Perceived Easiness of Use
PEXP	Prior Privacy Experience (PEXP)
PLS-SEM	Partial Least Squares Structural Equation Modelling
PSM	Public Social Media (PSM)
PU	Perceived Usefulness
RQ	Research Question
SFW	Shop Floor Workers
SURV	Perceived Surveillance
SUSE	Secondary Use of Personal Information
TAM	Technology Acceptance Model (TAM)
UGC	User Generated Content
VIFs	Variance Inflation Factors

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Overview of Publications and Task Allocation

The publications described in this section are listed in chronological order of the publication date (Table 1). Each published article went through a scientific peer-review process, with latest article being in the process of being submitted to a peer-reviewed scientific outlet as well. Some publications went through several rounds of the review process and therefore the dates of publication of the articles are not necessarily congruent to the course of the research.

In the first article, the categorization of ESM moderation approaches is presented and translated into an organizational moderation concept (Nolte *et al.* 2017). This specific research gap was identified based on the fact that the main part of the ESM literature is focused on the user and not on the organization as the platform operator. In the research process, I conducted a literature review according to Webster and Watson (2002) with the aim to conceptualize new research advances by connecting prior research. Along with the co-authors, I developed a categorization framework for organizational moderation approaches. The categories were derived by me from the literature (theoretical foundation) and discussed among the author's team. The moderation concept was also developed by me and refined in the research team. Expect for the methodology section (in which I acted as a reviewer and dataset provider for the literature review documentation), the article was written by me and refined through a discussion with the co-authors.

The second article is about the influence of professional diversity on the technology acceptance of ESM platforms (Guhr *et al.* 2018). Based on the first article, we identified the need for an organizational wide application of ESM and through an established relationship to an organization I could validate the practical relevance. A literature review was then conducted according to Webster and Watson (2002) to find related studies and create a theoretical foundation. Based on the literature review findings, I created an ESM professional diversity assessment concept. The concept was discussed and refined with the research team. Expect for the methodology section (where I again acted as a reviewer and dataset provider for the literature review documentation), the article text was written by me and refined through a discussion with the co-authors. An integration with the technology acceptance model was added for this dissertation summary as a research extension, which was reduced due to the page restriction of the chosen publication outlet.

The third article is a consequence of the first article and extends the moderation concept based on the content quality dimension (Nolte, Guhr, Breitner, et al. 2019). The relevance for this extension was derived from the presentation and the scientific discourse of the initial moderation concept at the Hawaii International Conference on System Sciences in 2017. Based on the collected feedback, I formulated a connected research assignment for two bachelor students, who are also listed as co-authors of this publication. To validate the theoretical gap, the two co-authors conducted a subsequent literature review according to Webster and Watson (2002). Based on the screened literature, I executed a backwards and forward search to complete the review process. The literature review sample was then refined to meet the expected quality standards for the publication process, and the extension of the original moderation concept was developed by me through integrating the identified organization moderation approaches into content quality assurances approaches and operationalization with content quality metrics. Expect for the methodology section (where I functioned as a reviewer and dataset provider for the literature review documentation), the article text was written by me and refined through a discussion with the co-authors.

In the fourth article, the focus is shifted from ESM moderation itself to the shop floor environment and the internal digital transformation potentials (Nolte, Guhr, and Breitner 2019). The article builds upon the theoretical foundation of the second article and provides through a case study real practical insights of a digital shop floor empowerment project. In the present study, I conducted the semi-structured interviews with SFWs, transcribed the recordings of the interviews, and conducted an analysis of the initial interviews. The initial and explorative findings were discussed with the co-authors, one of whom reviewed my interview analysis for validation. The text was written by me and refined through a discussion with the co-authors. In the methodology part, the theoretical case study method was written by the co-authors, whereas the case study and description of the data collection process were written by me.

In the fifth article, the critiques regarding the privacy concerns of organizational management of new digital collaboration technologies are investigated based on an example of BYOD (Degirmenci *et al.* 2019). The article describes the development and validation of a structural equation model on the effect of privacy concerns regarding the intention to use private company managed devices. The article is based on a theoretical foundation as well as two real life case studies as a practical starting point for the evaluations. My role in this research was limited to providing a case study valuation

and acting as an advisor for the discussion. The survey study was conducted by the main authors. The article was based on prior conference proceedings of the main authors, and was submitted for publication serval times in different outlets without the addition of the case studies. With the additions of the case studies the articles provided the necessary relevance for a peer review, which is an integral part of a successful publication.

Article six picked up the initial explorative shop floor ESM case study evaluation of article four, and added a theoretical evaluation based on the technological frames as well as a new expert interview study for a holistic organizational IS-induced change model (Nolte *et al.* 2020). The existing shop floor interview study was evaluated by me and one of the co-authors. Both of us observed the expert interview round and I transcribed and evaluated the additional interviews. During the research process, a new researcher was added to the team and helped with revising and framing the introduction as well as providing revision comments for each paragraph. In the methodology section, the theoretical case study method was written by the co-authors; however, the case study and data collection process description were conducted by me. The remaining text was written by me and refined through a discussion with the co-authors.

The seventh article, was focused again on privacy concerns particularly for ESM (Guhr *et al.* 2022). The research gap was established based on the ESM moderation privacy critique and a theoretical foundation. The study described the development of a structural equation model that was validated through a survey. In this present article, I functioned as a co-author in the capacity of an advisor, helping with refining the introduction, the overall discussion, and the interpretation of the empirical findings for determining their practical implications. The study design, survey execution, and structural equation modeling was done by the lead author and one of the co-authors. By the time of the submission of this dissertation, this article is in the final stage of being submitted to B-ranked and peer-reviewed journal.

Table 1 Overview of Publication

Year	Title	Authors	Outlet	VHB-JOURQUAL 3[1]	Chapter
2017	Moderation of Enterprise Social Networks – A Literature Review from a Corporate Perspective	Nolte, Ferry; Guhr, Nadine; Breitner, Michael H.	Proceedings of the 50th Hawaii International Conference on System Sciences (HICSS)	C	2.1
2018	Enterprise Professional Diversity and Challenges for Social-Collaboration Technologies	Guhr, Nadine; Nolte, Ferry; Breitner, Michael H.	International Journal of Business and Social Science	NA	3.1
2019	Enterprise Social Media Moderation and User Generated Content Quality: A Critical Discussion and New Insights	Nolte, Ferry; Guhr, Nadine; Breitner, Michael H.; Badtke, Larissa; Göing, Katharina	Proceedings of the 27th European Conference on Information Systems (ECIS)	B	2.2
2019	Organizational Challenges for Enterprise Social Media at the Shop Floor	Nolte, Ferry; Guhr, Nadine; Breitner, Michael H.	Proceedings of the 25th Americas Conference on Information Systems (AMCIS)	D	3.2; 3.2.4; 3.2.5
2019	Future of Flexible Work in the Digital Age: Bring Your Own Device Challenges of Privacy Protection	Degirmenci, Kenan; Shim, J P; Breitner, Michael H.; Nolte, Ferry; Passlick, Jens	Proceedings of the 40th International Conference on Information Systems (ICIS)	A	2.4
2020	The Journey towards Digital Work Empowerment - Conceptualizing IS-Induced Change on the Shop Floor	Nolte, Ferry; Guhr, Nadine; Richter, Alexander	Proceedings of the 41th International Conference on Information Systems (ICIS)	A	3.2; 3.2.7
2022	An Empirical Analysis of the Influence of Information Privacy Concerns on Enterprise Social Network Usage	Guhr, Nadine; Nolte, Ferry; Lohse, Thomas; Breitner, Michael H.	To be submitted	(B)	2.3

[1] Verband der Hochschullehrer für Betriebswirtschaft JOURQUAL 3 Ranking

1 Introduction

1.1 Motivation and Relevance

Organizations currently face significant challenges with the digital transformation of their business processes and the corresponding need to introduce IS and information technology (IT) (Kraus *et al.* 2021; Vial 2019). One of the main challenges to a digital transformation is the pressure for organizations to adopt to a changing business environment that has rapid changes in technology and the workplace at its core (Dittes and Smolnik 2019; Fischer *et al.* 2020; Kraus *et al.* 2021). Based on globalization and a geographical dispersed organizational footprint, the market pressure demands higher innovativeness rates from organizations to stay competitive (Archibugi and Iammarino 2002; Kiehne *et al.* 2016). In this race toward innovation, manual labor and repetitive task excellence are becoming more automated, broadly accessible, and consequently less relevant. At the same time knowledge itself and the associated field of knowledge work are becoming important competitive advantages for organizations (Archibugi and Iammarino 2002; vom Brocke *et al.* 2018). To overcome the increasing complexity of knowledge work and employee demands for greater work flexibility, organizations are applying new IT tools and IS to facilitate such changes in the future workplace (vom Brocke *et al.* 2018; Dery *et al.* 2017; Leonardi 2015; Neeley and Leonardi 2018). In this multi-level changes process, ICT has proven to be beneficial to transforming organizational processes from a knowledge perspective, because such technologies combine the capture and processing of information in a traceable, collaborative, and structural empowering way, (Campatelli *et al.* 2016; Dittes and Smolnik 2019; Leyer *et al.* 2019). Making ICT available alone for employees is not necessarily providing the organizational conditions for an efficient digital collaboration because the employees will miss social interaction or informal conversations that are needed for successful digitalization of collaborative tasks (Dittes and Smolnik 2019). Out of the need for integrating digital social interaction into a digital work environment, organizations are implementing ESM because such technology platforms bundle several features of ICT and allow knowledge to be captured in a socially interactive based manner (Dittes and Smolnik 2019; Johns and Gratton 2013; Kügler *et al.* 2015; McAfee 2019, 2006).

ESM is defined as the application of Web 2.0 in a corporate context and was labeled originally as “Enterprise 2.0” by McAffee (2006). The initial application of ESM was not

limited to an intra-organizational context and also included the use of public social media (PSM) for corporate purposes such as customer engagement (Turban *et al.* 2011; Wehner *et al.* 2017). Over the evolution of the ESM research field and the stronger focus on knowledge work, the research focus has specialized on the intra-organizational application of ESM with a focus on employee and organizational collaboration benefits (Wehner *et al.* 2017). ESM in this intra-organizational is defined as "Web-based platforms that allow workers to (1) communicate messages with specific coworkers or broadcast messages to everyone in the organization; (2) explicitly indicate or implicitly reveal particular coworkers as communication partners; (3) post, edit, and sort text and files linked to themselves or others; and (4) view the messages, connections, text, and files communicated, posted, edited and sorted by anyone else in the organization at any time of their choosing" (Leonardi *et al.* 2013, p. 2). Such web-based social media technologies have similar user features with regard to profiles, relational connections, and sharing (Boyd and Ellison 2007). Within an organizational context, ESM platforms combine the features and technologies of blogs, microblogging, social networking sites, wikis, and communities (Denyer *et al.* 2011; Kaplan and Haenlein 2010; Treem and Leonardi 2012). In an organizational context, often third party and white label products such as HLC connections (formerly IBM Connections), Yammer, Jive, or Facebook Workplace, or self-developed platforms with similar features are in use (Husin and Hanisch 2011a; Kuegler *et al.* 2015; Laitinen and Sivunen 2020; Majchrzak *et al.* 2006, 2013; Yates *et al.* 2009).

Intra-organizational ESM makes the organizational flows of knowledge and information visible through ESM user interactions and enables employee-driven communication, collaboration, innovation, and knowledge sharing (Gray *et al.* 2011; Leonardi 2014). The visibility allows other ESM members to participate, either actively or passively, in the information exchange process and to learn from and about their co-workers (Neeley and Leonardi 2018). The less-structured nature of ESM demonstrates its full potential when applied to non-routine tasks, which initially targeted the knowledge worker profession (Kuegler *et al.* 2015; Scarbrough 1999). The fact that the visibility concept of ESM underlies an open distribution of expertise suggests that ESM promotes tasks that "not only require novel solutions but require others' inputs" (Majchrzak *et al.* 2006, p. 102). Hence, collaboration and interdependency are characteristics of tasks typically accomplished using ESM. To collect all benefits, organizational-wide

ESM accessibility that exposes users (functional or structural) to a broad range of information is required, and organizations need to find ways to include those who have no permanent digital access and to engage all employees in active participation (Chin, Evans, and Choo 2015; Giermindl *et al.* 2017).

Because ESM fundamentally changes the organizational process and challenges existing power relations, exposing all organizational members to ESM confronts organizations with an IS-induced organizational change (Behrendt *et al.* 2015; Karoui *et al.* 2015; Treem and Leonardi 2012). The new methods of digital collaboration and open knowledge access integrate employees of all areas and organizational levels into a new knowledge work environment, which demands information processing and problem-solving skills to master and results in an empowerment of the organizational members (Leyer *et al.* 2019; Nocera *et al.* 2007). Although this change might be incremental for the majority of office-based and digitally integrated workers, for SFWs who continue to have poor digital integration, this change is significant (Hopp *et al.* 2009; Kleindienst *et al.* 2016; Lipiäinen *et al.* 2014). In this overall change in workplace combined with the advancements and automation of the manufacturing process, organizations assign SFWs a new role as manufacturing process coordinators and operational knowledge contributors (Autor and Dorn 2013). Therefore, an IS-induced change poses a unique challenge for organizations and its members, which has not received much attention in the IS literature (Bayo-Moriones *et al.* 2017; Leyer *et al.* 2019).

Because the workplace is changing into a knowledge work environment, conventional work settings are becoming less attractive for employees. Although ESM can certainly address some of the new needs, concepts such as BYOD are also utilized by organizations to cope with a new desire for greater work flexibility (Choudhury *et al.* 2021; Garba *et al.* 2015). The social nature of ESM and the corporate access to the private devices of its employees allow an organization to obtain and connect personal information that was not previously obtainable. Privacy concerns have proven to be a significant barrier to IS adoption (Buettner 2015; Lebek, Degirmenci, *et al.* 2013; Ratchford *et al.* 2021). For the future work solutions, little is known regarding how such privacy concerns will affect ESM or BYOD solutions in an organizational context considering this broad personal data access by organizations (Buettner 2015; Lebek, Degirmenci, *et al.* 2013; Ratchford *et al.* 2021).

1.2 Research Questions and Thesis Structure

As indicated in the introduction, in this thesis, the ESM is evaluated from an organizational perspective, with three different angles, and seven research questions (RQs) are investigated. The first part focuses on the ESM and BYOD solutions. The first two chapters investigate ESM from an organizational perspective because the prior literature focused on the user views of ESM or technical substitutes that differ from other types of organizational ICT (Huang *et al.* 2015; Leonardi *et al.* 2013; Treem and Leonardi 2012; Wehner *et al.* 2017). Therefore, the first research question is investigated from an organizational perspective on the governance and knowledge sharing optimization as a novel research area (Wehner *et al.* 2017):

> *RQ1: How can organizations moderate the social exchanges in ESM and influence the quality of user generated content (UGC)?*

Owing to the extensive but unstructured body of knowledge for the young ESM research field, a literature review methodology was chosen to identify organizational aspects mentioned in discussions or practical and theoretical contributions, organize them methodically, and synthesize new insights.

Following the finding of the first two chapters and the identified risk of perceiving active ESM moderation as a privacy intrusion by the employee, the next two chapters focus on privacy concerns in the context of future work solutions (Nolte et al. 2017; Nolte, Guhr, Breitner, et al. 2019). First, the specific privacy concerns associated with ESM, and second the privacy concerns of BYOD, are investigated along with the research questions:

> *RQ2: How do employee concerns for information privacy influence their behavioral intention to use enterprise social networks (ESN)?*
>
> *RQ3: How do companies deal with employee privacy concerns regarding the introduction of BYOD and what is the impact of employee privacy calculus on the risks and benefits associated with the intention to use of mobile BYOD devices?*

The research questions are answered with a structural equation modeling utilizing privacy concern theory to investigate the impact of privacy concerns on the intention to use such new work-based technologies. The survey tool was chosen because there is

little empirical evidence for privacy concerns on future work concepts (Buettner 2015; Lebek, Uffen, *et al.* 2013).

The second part of the dissertation focuses on ESM in the context of IS-induced change. First, a literature review was conducted to follow the call for research into investigating the fit of none knowledge worker profiles to be engaged in ESM, which was manifested in the first part of this dissertation (Giermindl *et al.* 2017; Steinhueser *et al.* 2015). Following this call the following research question is asked:

> *RQ4: How is professional diversity influencing the intention of employees to use ESM?*

The identified ESM profile manifested a lack of research in the area SFW that represent still in many organizations a major workforce group and which are considered as the digitally forgotten part of the organization (Autor 2015; Guhr *et al.* 2018; Hannola *et al.* 2018). An exploratory case study approach was chosen to investigate in an international organization the status quo of the digital integration of SFWs, potential ESM empowerment challenges, and an ESM usage profile for SFWs. With the help of the technological frames concept (see Orlikowski and Gash (1994)), the case study systematically evaluates SFW interviews, asking the following:

> *RQ5: How do shop floor workers perceive their ICT integration and how can they utilize ESM?*
>
> *RQ6: How ESM empowerment results in organizational challenges at the shop floor level and how can the task profile of shop-floor workers influence the ESM integration?*

The case study results of the research question provide a first in-depth SFW digital empowerment assessment. The findings build the foundation for the last research question. The longitudinal characteristic of the case study is allowed in the second step to abstract and describe an IS-induced change in different stages. Embedded into the organizational empowerment and digital workplace of the future program, the dataset provides the necessary variety of viewpoints (SFWs, organizational development experts, and organizational communication materials) to conceptualize an IS-induced organizational change process and to answer the final research question:

> *RQ7: What is the role of organizational practices and organizational mindset in the context of IS-induced change aiming to empower shop floor workers*

Answering the final research question allows an integrated discussion regarding the organizational change process that does not stop with simply implementing a new IS. Interweaving IS implementation with a mindset and work practices provides a holistic change process model that can help explain why the change processes are not working as intended or allow for a better pre-change assessment.

The research agenda of this dissertation contributes to the research fields of ESM, shop floor IS users, and IS-induced change. Theoretically and practically, the thesis adds the first specific insight into how to moderate ESM in the corporate context from a novel organizational perspective. From this broader literature-based starting point, two critical research gaps are investigated: privacy concerns of ESM users and how to integrate the non-digitally integrated SFWs. The privacy concerns are of special interest because with the first developed organizational ESM moderation concept for better content generation, employees might fear organizational monitoring, which could be contra productive for the intent of ESM moderation. Expanding the research to include BYOD is connected because the new flexible communication needs often accompany novel hardware solutions to access such tools. From there, in the second chapter, the dissertation considers deeply the shop floor environment. First a novel ESM technology job characteristic fit assessment is synthesized from the literature. Taking this initial literature findings as basis, a unique case study is evaluated to create theoretical insights from the technological frame concept applied to ESM and generate an SFW ESM profile. After ESM and SFW assessment and use case generation, the dissertation elevates the research to a more abstract level and synthesizes a novel IS-induced change model that interconnects different organizational dimensions. After the evaluation of each of the research questions, an overall discussion of the findings is conducted, followed by some concluding remarks and future areas of research.

2 Enterprise Social Media Content Moderation, Content Quality, Privacy Concerns and Bring Your Own Device

2.1 Moderation of Enterprise Social Media – A Literature Review from an Organizational Perspective

This chapter is based on two complimentary research articles. The first is "Moderation of Enterprise Social Networks – A Literature Review from a Corporate Perspective" by Nolte *et al.* (2017) (see Appendix A1) and was published in the conference Proceedings of the 50th Hawaii International Conference on System Sciences in the Digital Social Media in Enterprise Minitrack. The conference track studies the use of social media in organizations to identify the role of ESM in work environments, including its challenges and opportunities. VHB-JOURQUAL 3 rates the conference with a "C." The literature review in the published proceedings includes literature from 2006 up to the year 2016. The second article is titled "Enterprise Social Media Moderation and User Generated Content Quality: A Critical Discussion and New Insights," also by Nolte *et al.* (2019) (see Appendix A2). The article is published in the conference proceedings of the 27th European Conference on Information Systems (ECIS) in the Social Media – Digital Work, Digital Life research track. This conference track addresses the role of social media in both digital work and digital life and focuses on the challenges and opportunities arising particularly from a policy-maker perspective. VHB-JOURQUAL 3 rates the conference with a "B." The literature review in the published proceedings includes studies on ESM and PSM from 2005 up to the year 2018 and is a consistent further development of the first research article considered.

2.1.1 Research Motivation

Organizations apply ESM to facilitate a better exchange, wider reach and easier access to organizational information for their employees (Aral *et al.* 2013; von Krogh 2012; Leonardi *et al.* 2013). The main intention for organizations is the visibility of information and relational ties within an organization to bridge structural holes in terms of employee innovation or to diminish unwanted information brokerage of specific individuals in the organization (Gray *et al.* 2011; Riemer *et al.* 2015). The user generated content (UGC) within ESM is the key variable for an organization to achieve such organizational wide transparency (Leonardi *et al.* 2013). The UGC display allows employees to actively or passively discover such information and build up new organizational ties for a more effective organizational collaboration (Kuegler *et al.* 2015; Treem

and Leonardi 2012). The ESM research stream has focused on the substitutions of traditional ICT through ESM (Huang *et al.* 2015; Leonardi *et al.* 2013; Treem and Leonardi 2012), the effect on employee performance in using ESM (Ali-Hassan *et al.* 2015; Herzog and Richter 2016; Kuegler *et al.* 2015), and factors influencing the motivation of employees to engage or reject such platforms (Buettner 2015; Chin, Evans, and Choo 2015; Chin, Evans, Choo, *et al.* 2015; Kügler and Smolnik 2013; Mettler and Winter 2016; Singh *et al.* 2014; Urbach *et al.* 2015). However, the research into ESM has omitted the organizational perspective and the difficulty of implementing a crowd-based information system into hierarchical information management environments. In particular, the encouragement to provide UGC in prior research seemed to be assumed as sufficient based on the possibility of publishing such content in this new organizational medium. ESM services have established legitimacy of the UGC shared by its members, and organizations can moderate the participations of users; however, shared UGC may not achieve the level of quality required to be considered beneficial (Beck *et al.* 2014). There is a risk that false information or poor quality content will be spread within an organization owing to the open and unrestricted nature of ESM (Fulk and Yuan 2013). This is a significant risk for the success of the ESM services because the quality of ESM content is considered to be a crucial factor for ESM usage and its legitimization as an alternative information source within an organization. In this regard, the body of knowledge is extremely small respect to UGC quality and how to ensure such quality within this medium (Beck *et al.* 2014; Chin, Evans, and Choo 2015; Fulk and Yuan 2013). Consequently, organizations have a significant interest in encouraging ESM users to contribute content, which requires some sort of organizational moderation to engage the user. Once the encouragement to contribute is established, organizations need to establish the topic of UGC quality assurance. Understanding the organizational mechanisms will help further understand the role of UGC and in moderation options. Combining moderation with the UGC quality dimension will enable organizations to establish ESM within an organization with all of its benefits and will allow for better decision-making regarding organizational ESM interventions. Prior research was either user focused or technical feature driven (*e.g.*, Wehner *et al.* (2017)), and therefore the organizational perspective on the encouragement of ESM usage poses an interesting research gap and will be addressed in this chapter based on two complementary literature reviews asking the following research question:

RQ1: How can organizations moderate the social exchanges in ESM and influence the quality of UGC?

2.1.2 Research Methodology

To follow this research question, the idea was to structure the still relatively young and evolving body of knowledge from a corporate perspective with relevant research literature pertaining to ESM moderation. The literature review was conducted according to Webster and Watson (2002) with the aim to conceptualize new research advances by connecting prior research findings. Following Gaß *et al.* (2015) the study outlines a four-phase process for this research paper: (1) problem formulation and database collection, (2) initial screening, (3) clustering, and (4) an in-depth evaluation, analysis, and presentation of the data to synthesize and extend the current body of knowledge. To achieve an appropriate pool of literature, the process focused on highly ranked IS journals (Lowry *et al.* 2004; Peffers and Tang 2003); however, the search was expanded to conference proceedings and peer-reviewed lower-ranked journals, which often are starting points for discussions by researchers (Loebbecke and Leidner 2012; Te'eni *et al.* 2015). To ensure reliability, which refers to the replicability of the search process, the literature search process was comprehensively documented. Validity is based on the selected databases, covered period, keywords used, and the application of forward and backward searches (Brocke *et al.* 2009). The described process was executed for the two complimentary literature reviews, which are documented below in the following paragraphs.

Table 2 Overview literature search No 1

Database	Field and Access*	Document Type	Search Results
ACM	All	Journal, Conference	21
AISeL	All	Journal, Conference	136
IEEEXplore	All	Journal, Magazine, Conference	47
JSTOR	All	Journal	3
ScienceDirect (Elsevier)	All	Journal, Conference	67
SpringerLink	All	Journal, Conference	23
Wiley	All	Journal	101
Emerald	All	Journal	26
InformsOnline	All	Journal	194
Total			**618**

*Articles searched using all search criteria fields with full text and limited access.

For the first literature search, different databases were queried with a broad selection of search terms: “enterprise social media” OR “enterprise social network” OR “enterprise social software” OR “enterprise social networking.” The broad selection of different ESM search terms was chosen to account for an inconsistent naming convention of the technology, which was still evolving at this stage of the research. The search produced an initial sample size of 618 publications (see Table 2). This broad literature base was then reviewed for ESM topic relevance (*e.g.*, title, abstract, and full-text reviews). After applying the exclusion criteria, a final number of 157 papers were utilized. After evaluating the 157 papers and categorizing them based on the broad ESM domains of “knowledge sharing,” “user collaboration/communication,” and “organizational communication” the research team identified 16 topic clusters related to ESM moderation. The given topics, summarized in Table 3, are all tied to organizational structures or procedures that relate to organizational interference. The theme “power,” for example, dealt with UGC flow barriers relating to organizational hierarchy, whereas “content overflow” concerns the problems that companies face in marketing the use of ESM owing to content prioritization. These various topics allow the collection of various difficulties that organizations face when moderating ESM.

Table 3 Moderation cluster categorization

Code	Topic	Cluster
A	Empowerment	Moderation
B	Power	Moderation
C	Policies	Moderation
D	Business Objective	Moderation
E	Content Quality	Moderation
F	Content Overflow	Moderation
G	Corporate Knowledge Diffusion	Moderation
H	Knowledge Protection / Ownership	Moderation
I	Control	Moderation
J	Hierarchy	Moderation
K	Governance	Moderation
L	Media Synchronity / Ambidexterity	Moderation
M	Leadership	Moderation
N	Participation	Moderation
O	Moderation / Corporate communication	Moderation
P	Feedback / Employee Voice	Moderation

Table 4 Literature review matrix No 1

Article	Moderation topic cluster															
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
(Annabi *et al.* 2012)			x	x					x							
(Baltatzis *et al.* 2008)	x		x											x		
(Baptista and Galliers 2012)		x							x	x	x	x			x	x
(Boateng *et al.* 2009)							x					x				
(Chin and Choo 2015)			x								x					
(Chin, Evans, and Choo 2015)			x								x		x			x
(Chin, Evans, Choo, *et al.* 2015)			x								x		x			
(Danis and Singer 2008)		x									x					
(Denyer *et al.* 2011)	x	x							x	x				x	x	x
(Ellison *et al.* 2015)		x							x	x	x					
(Gibbs *et al.* 2015)		x							x	x			x			
(Grudin 2006)							x					x				
(Janes *et al.* 2014)		x							x	x			x	x		
(Herzog and Richter 2016)				x										x		x
(Huang *et al.* 2015)	x	x			x	x					x	x	x	x	x	x
(Huang *et al.* 2010)					x	x								x	x	
(Husin and Hanisch 2011b)			x								x				x	
(Jackson *et al.* 2007)			x				x						x			
(Kolari *et al.* 2007)		x	x						x	x			x			
(von Krogh 2012)								x			x			x		
(Leonardi *et al.* 2013)								x						x		x
(Mansour *et al.* 2011)		x							x	x						
(Miles and Mangold 2014)											x			x	x	x
(Muller *et al.* 2012)																
(Osch et al. 2015)									x	x	x			x		
(Razmerita *et al.* 2014)							x							x		
(Singh *et al.* 2014)											x				x	
(Smith and McKeen 2011)				x												
(Stenmark 2008)	x	x							x	x			x			
(Turban *et al.* 2011)											x			x	x	
(Wang *et al.* 2014)													x		x	

The second literature review was conducted one year after the first literature review. Similar to before, the focus was primarily on top IS literature; however, owing to the evolving nature of the research field, the search process also included peer-reviewed conferences and lower-ranked journals to allow novel ideas to also be captured (Loebbecke and Leidner 2012; Te'eni *et al.* 2015). To meet the requirement for validity, different databases were searched and the search process documented. This time, the search was conducted with three different search queries to account for different abstraction levels in the literature in regard to the quality of the content (*e.g.*, Query 1,

"user generated content," "quality," and "enterprise social media"; Query 2, "user generated content" and "quality" ("enterprise social" AND "network" OR "media" OR "networks"); Query 3, "user generated content" and "quality" ("public social" AND "network" OR "media" OR "networks"). The results are shown in the table below, and the separate queries did not exclude articles that appeared in one of the other queries; therefore, duplications are possible among the total number.

Table 5 Overview literature search No. 2

Search criteria			**Search terms**		
Database	**Field and Access***	**Document Type**	Query1	Query2	Query3
ACM	All	Journal, Conference	0	2	1
AISeL	All	Journal, Conference	32	51	24
arXiv	Computer Science, Economics	Journal, Conference	0	0	2
IEEEXplore	All	Journal, Magazine, Conference	0	0	0
JSTOR	All	Journal	0	0	1
SAGEpub	All	Journal	1	2	17
Semantic Scholar	Computer Science	Journal, Conference	48	140	149
ScienceDirect (Elsevier)	All	Journal, Conference	11	31	36
SpringerLink	All	Journal, Conference	18	68	28
Wiley	All	Journal	7	18	8
Emerald	All	Journal	6	10	11
InformsOnline	All	Journal	0	0	4
Taylor&Francis	All	Journal	10	17	22
Total			**133**	**339**	**303**

*Articles searched using all search criteria fields with full text and limited access.

After this initial literature search, as before, the exclusion criteria were applied, reducing the ESM literature to a final set of 10 papers. Because the generation of high-quality content is a crucial part of the public social media business model, the literature review was extended to the public social media research field. This added 51 additional sources to the dataset, which was then screened for topic relevancy. The coding of the articles was conducted by two researchers independently and then consolidated. This process was documented and the interrater reliability was calculated at $\kappa = 0.83$ (*P*-value < 0.000), suggesting a high level of agreement between the coders (Landis and Koch 1977). The final literature review base, shown in Table 6, includes 35 articles that were subsequently reviewed in depth and by the research team, and two main themes were identified in this literature set, *i.e.*, UGC quality measures and UGC content quality moderation.

Table 6 Literature review matrix No 2

Context	Authors	UGC quality measures	UGC content quality moderation
Enterprise Social Media	(Archer-Brown and Kietzmann 2018)	x	
	(Braun *et al.* 2012)	x	x
	(Brzozowski *et al.* 2009)	x	
	(Farzan *et al.* 2008)	x	x
	(Hacker *et al.* 2017a)	x	x
	(Hacker *et al.* 2017b)	x	x
	(Liu *et al.* 2013)	x	x
	(Malsbender *et al.* 2013)	x	
	(Mansour *et al.* 2011)	x	x
	(Turban *et al.* 2011)		x
	(Viol *et al.* 2015)	x	
	(Ye *et al.* 2016)	x	x
Public Social Media	(Agichtein *et al.* 2008)	x	
	(Burtch *et al.* 2015)	x	x
	(Chai *et al.* 2011)	x	
	(Chen *et al.* 2010)	x	x
	(Chen *et al.* 2011)	x	x
	(Cheng and Nault 2012)	x	
	(Cheng and Vassileva 2005)	x	x
	(Ghosh and Hummel 2014)	x	x
	(Hellmann *et al.* 2010)	x	
	(Ingawale *et al.* 2013)	x	
	(Jain *et al.* 2009)		x
	(Kim and Han 2009)	x	
	(Lee and Kim 2017)	x	
	(Lee and Whinston 2015)	x	
	(Lin *et al.* 2012)	x	
	(Ling *et al.* 2005)	x	x
	(Petz *et al.* 2013)	x	
	(Wang and Cheng 2010)	x	
	(Wang *et al.* 2012)	x	x
	(Wang *et al.* 2017)	x	
	(Wiertz and de Ruyter 2007)	x	x
	(Yaari *et al.* 2011)	x	
	(Zheng *et al.* 2015)	x	x

2.1.3 Findings of Literature Review 1: Moderation Approaches for Enterprise Social Networks

The moderation topic clustering gives a first glance at the main themes related to the moderation of UGC. Because ESM is a corporate tool, its use can be mandated, optional, or promoted to the employees (Ellison *et al.* 2015). ESM usage translates into a potential loss of control over the corporate information distribution monopoly and is

called for in the literature to implement UGC restrictions (e.g., Baptista and Galliers (2012); Behrendt *et al.* (2015); Denyer *et al.* (2011); Ellison *et al.* (2015); McAfee (2006); Treem (2014)). However, this view is contradicted by the view of higher management, which sees the potential to leverage informal information and communication economies, in contrast to the researchers concerns (Leonardi 2015). Based on this contradicting view, the UGC creation is in the middle of a goal conflict of the loss of control or the free content creation (Baptista and Galliers 2012).

Table 7 Summary of moderation approaches

Article	**Corporate supervision**	**Corporate guidance**	**Employee self-organization**
(Annabi *et al.* 2012)	x		
(Baltatzis *et al.* 2008)			x
(Baptista and Galliers 2012)	(x)	x	
(Boateng *et al.* 2009)			
(Chin and Choo 2015)	(x)	x	
(Chin, Evans, and Choo 2015)		x	
(Chin, Evans, Choo, *et al.* 2015)		x	
(Danis and Singer 2008)			x
(Denyer *et al.* 2011)		x	
(Ellison *et al.* 2015)		x	
(Gibbs *et al.* 2015)		x	
(Grudin 2006)		x	
(Janes *et al.* 2014)		x	
(Herzog and Richter 2016)		x	
(Huang *et al.* 2015)	(x)	x	(x)
(Huang *et al.* 2010)	x		
(Husin and Hanisch 2011b)		x	
(Jackson *et al.* 2007)		x	
(Kolari *et al.* 2007)		x	
(von Krogh 2012)			x
(Leonardi *et al.* 2013)			(x)
(Mansour *et al.* 2011)	x		
(Miles and Mangold 2014)		x	
(Muller *et al.* 2012)		(x)	
(Osch et al. 2015)		(x)	(x)
(Razmerita *et al.* 2014)		(x)	(x)
(Singh *et al.* 2014)		x	
(Smith and McKeen 2011)		(x)	(x)
(Stenmark 2008)		(x)	(x)
(Turban *et al.* 2011)	x		
(Wang *et al.* 2014)		x	
(x) not solely in favor	***3***	***5***	***6***
x in favor	***4***	***17***	***3***

Based on such diametral standpoints, two UGC moderation approaches were derived, *i.e.*, the corporate supervision and employee self-organization of UGC. These two extreme approaches leave room in the middle for a third approach that focuses on the corporate guidance of UGC. Table 7 provides an overview of the article classification of these three approaches, whereas some articles occasionally reference and discuss one of the other approaches and are therefore categorized as more than one type of approach.

Each approach has specific characteristics, which are summarized in detail in Tables 8 to 10 at the end of this chapter. The corporate supervision approach demands active organizational involvement through a dedicated corporate support structure that engages in monitoring and filtering of the UGC, establishing a safe and predictable new communication environment with organizational policies, strict UGC content reviews, and access controls. Through this clear structure and curated environment, the user should feel empowered and consequently encouraged to use ESM. However, although critical views in this approached have also been mentioned, the restriction can also pose as a barrier to ESM participation; however, the overall UGC quality assurance was argued to have a higher value for ESM usage than the freedom of an anarchic content contribution of a single user (Turban *et al.* 2011). Through a dedicated ESM support organization and active content control, this approach will require a high degree of corporate moderation engagement.

The contrasting employee self-organization approach has a foundation in the crowd-based roots of Web 2.0. Here, the lack of institutional UGC distribution barriers in connection with full transparency of ESM interactions should create a self-governed ESM environment through induced accountability and user freedom. One important factor in this approach is the corporate culture, which needs to be permissive, open, and driven by equality such that the ESM user feels self-motivated to engage in and actively steward UGC by themselves. This approach will be a challenge for large hierarchical organizations that are used to top-down and standardized information flows (Stenmark 2008). Without a support structure or employee self-organization theme, this approach is low in terms of the degree of corporate moderation engagement.

The corporate guidance approach tries to combine the advantages of both approaches. This approach demands from the organization new capabilities such as communicational ambidexterity and a flexible context awareness of when to engage in

an ESM discourse and when to hold back. More importantly, the organization needs to facilitate education on ESM use such that all users have the same perception and knowledge regarding the service and feel self-efficacy to master this new organizational tool. User education is one of the main pillars for ensuring the stewardship principle of users taking over the self-regulation of UGC. Through user education, this self-regulation is argued to be more efficient and more quickly established, as in the employee self-organization approach (Chin, Evans, Choo, *et al.* 2015; Huang *et al.* 2015). An open and supportive corporate culture is required, and a top-management commitment to act as a UGC creation role model should help to establish and legitimize ESM next to conventional corporate information services. Further, this approach tries to offer support to the user through templates and content recommendations to make the use and navigation of ESM services more convenient. All of these together should form common principles based on the background guidance of the organization and encourage the user to contribute. In this approach, the degree of corporate moderation engagement is higher than that in an employee self-organization approach but lower in comparison to the corporate supervision approach.

Table 8 Summary of corporate supervision approach

Moderation Cluster	**Description**	**Source**
Org. support structure	• Dedicated organizational department	(Annabi *et al.* 2012; Baptista and Galliers 2012; Chin and Choo 2015; Huang *et al.* 2015; Turban *et al.* 2011)
Policy/User compliance	• Dedicated user code of conduct • ESM policy • ESM use case description	(Annabi *et al.* 2012; Turban *et al.* 2011)
Access control	• User rights • Restricted areas	(Mansour *et al.* 2011; Turban *et al.* 2011)
Monitoring/Filtering	• Official content approval • Suppression of none relevant content	(Annabi *et al.* 2012; Huang *et al.* 2010; Turban *et al.* 2011)
Organizational pressure	• Usage Incentive structure • User Analytics	(Annabi *et al.* 2012; Huang *et al.* 2010; Mansour *et al.* 2011; Turban *et al.* 2011)
Content quality control	• Content Metrics • Content Curation	(Annabi *et al.* 2012; Huang *et al.* 2010; Mansour *et al.* 2011; Turban *et al.* 2011)

Table 9 Summary of employee self-organization approach

Moderation Cluster	Description	Source
Accountability	• Clear user names • User is responsible for his content	(Danis and Singer 2008; Huang *et al.* 2015; von Krogh 2012; Smith and McKeen 2011)
User freedom	• No restrictions UGC expression • No policies = No fear of wrongful penalized use	(Baltatzis *et al.* 2008; Danis and Singer 2008; Smith and McKeen 2011; Stenmark 2008)
Corporate culture	• Permissive corporate culture • Positive failure culture	(Baltatzis *et al.* 2008; Danis and Singer 2008; Huang *et al.* 2015; Razmerita *et al.* 2014; Stenmark 2008)
Transparency	• UGC traceability • Open UGC correction	(Baltatzis *et al.* 2008; Danis and Singer 2008; Smith and McKeen 2011)
Stewardship	• UGC governance based on common unspoken rules of ESM users • Connected to transparency and corporate culture	(Huang *et al.* 2015; Smith and McKeen 2011)
Accountability	• Clear user names • User is responsible for his content	(Danis and Singer 2008; Huang *et al.* 2015; von Krogh 2012; Smith and McKeen 2011)

Table 10 Summary of corporate guidance

Moderation Cluster	Description	Source
Dynamic governance	• Communicational ambidexterity • Common formularized guiding principles with degree of freedom for interpretation	(Denyer et al. 2011; Herzog and Richter 2016; Huang et al. 2015; Husin and Hanisch 2011b; Jackson et al. 2007; Kolari et al. 2007; Miles and Mangold 2014; Osch et al. 2015; Smith and McKeen 2011; Stenmark 2008; Wang et al. 2014)
Context	• Organizational context awareness • Interference or none interference based on context	(Boateng *et al.* 2009; Grudin 2006; Huang *et al.* 2015; Razmerita *et al.* 2014)
User education	• User trainings • Use case description	(Denyer *et al.* 2011; Herzog and Richter 2016; Husin and Hanisch 2011b; Kolari *et al.* 2007; Miles and Mangold 2014; Smith and McKeen 2011; Stenmark 2008; Wang *et al.* 2014)
Top-management commitment	• Active ESM user role model • Provide legitimacy to employees to use ESM	(Chin, Evans, and Choo 2015; Chin, Evans, Choo, *et al.* 2015; Chin and Choo 2015; Gibbs *et al.* 2015; Herzog and Richter 2016; Jackson *et al.* 2007; Janes *et al.* 2014; Wang *et al.* 2014)
Service orientation	• Content and User recommendation / promotion system • UGC presentation Templates	(Herzog and Richter 2016; Muller *et al.* 2012)
Stewardship	• UGC governance based on common unspoken rules of ESM users • Efficient self-regulation process through active user education	(Chin, Evans, Choo, *et al.* 2015; Huang *et al.* 2015)

2.1.4 Discussion of Literature Review 1: ESM Moderation Approaches and UGC Encouragement Assessment

From the previous chapter, it is clear what the distinct characteristics of each approach are, and in accord with these characteristics, a ranking of the degree of corporate engagement can be done. Each identified approach proclaims that it will encourage UGC. Therefore, a dedicated look at the encouragement rating of each approach was taken. This discussion regarding the encouragement also enabled us to answer necessity of ESM moderation. The importance of UGC encouragement is manifested in the critical mass success factor of a successful ESM implementation. To establish a self-sustaining UGC scenario for the ESM service next to the traditional communication and collaboration services, an organization needs to engage a critical mass of employees in UGC creation (Chin, Evans, and Choo 2015; Denyer *et al.* 2011; Harden 2012; Herzog *et al.* 2015; Jackson *et al.* 2007). With its rigor structure and guidelines, the corporate supervision approach wants to create a safe and curated content environment; however, the quality controls, *i.e.*, ESM activity tracking of the supervision approach, affect the privacy of an ESM user. The privacy concerns have a negative impact on the intention to use and sharing behavior, thus negatively affecting the encouragement level (Buettner 2015; Mettler and Winter 2016). In addition, the reduced freedom for users to generate content contradicts with the Web 2.0 idea and limits the diversity of UGC (Singh *et al.* 2014). The corporate supervision approach with its ambivalent control mechanisms will most certainly be perceived as a top-down communication channel and therefore will lead to a low level of UGC encouragement (Denyer *et al.* 2011). The employee self-organization approach prerequires an extremely open communication culture without hierarchical constraints, which although possible in a smaller organization, is difficult to implement in a multinational organization (Baptista and Galliers 2012; Denyer *et al.* 2011). In addition, the professional context, accountability, and risk of losing one's professional reputation for improper posts, as an example, can be a factor harming the encouragement of UGC (Grudin 2006; Treem 2014). This UGC freedom bears more user responsibility through active partaking in the power relation setting; nevertheless, the encouragement can be higher under the right setting in comparison to a supervision approach. The corporate guidance approach bears an advantage over both of the prior approaches. Its user-education induced common principles and context-dependent communicational ambidexterity can deliver freedom and structure at the same time (Davis *et al.* 1997; Huang *et al.* 2015). The risk here is associated with the organizational capability to provide a service without creating an impression among

users branding an employee identity (Huang et al. 2015; Nolte et al. 2017). With the service orientation and education for empowered ESM users and UGC contributors, the guidance approach is the most promising corporate approach toward encouraging UGC creation.

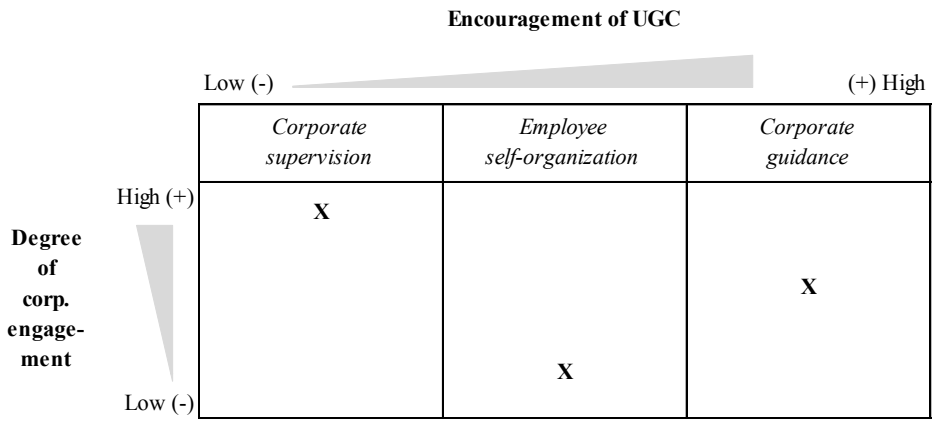

Figure 8 Result summary ESM shop floor profile

The proposed corporate moderation approach assessment is summarized in Figure 3, in which each approach is assessed based on the degree of corporate engagement and encouragement of UGC. Despite this assessment, it also becomes clear that even for self-organization, the organizations need to provide a minimal level of moderation, which further justifies the need for a corporate moderation concept when utilizing an ESM service in a business context.

2.1.5 Findings of Literature Review 2: ESM Content Quality Moderation and Measures

Table 11 provides an overview of the final literature clustering, which is described in the following paragraph. Quality is an entity-centric concept that describes a relational meaning of a particular desired need and its reconciliation of an actual experienced function with specific quality dimensions of the entity (Tilly *et al.* 2017). Because the content is interpreted at unknown times, in unknown context situations, and by an unknown audience, the understanding of UGC quality in the context of ESM is rather dynamic (Tilly *et al.* 2017). Due to its dynamic nature the quality of UGC can be described as a match between content demand and supply by users in their dual role as content providers and consumers and is characterized by uncertainty of its interpretation (von Krogh 2012; Leonardi *et al.* 2013). UGC quality is two-folded concept that

requires a two-step approach to be captured in an organizational context. First, organizations need to enable a supply of high-quality UGC. Second, to create the desired match between demand and supply of UGC, organizations need to ensure that quality expectations are met. The literature was screened based on these two steps and divided into two parts:

1. Identification of quality content within ESM services to moderate a resupply of already existing content;
2. Organizational approaches that can encourage the supply of high-quality content.

Table 11 Literature review matrix No 3

Context	Authors	Measures				Approach	
		Textual-based	Content-appraisal	Network-based	Author-based	Motivational	Localization
ESM	(Archer-Brown and Kietzmann 2018)		x				
	(Braun *et al.* 2012)				x		x
	(Brzozowski *et al.* 2009)			x			
	(Farzan *et al.* 2008)				x	x	
	(Hacker *et al.* 2017a)			x	x		x
	(Hacker *et al.* 2017b)			x	x		x
	(Liu *et al.* 2013)			x			x
	(Malsbender *et al.* 2013)		x				
	(Mansour *et al.* 2011)		x				x
	(Turban *et al.* 2011)						x
	(Viol *et al.* 2015)	x					
	(Ye *et al.* 2016)	x	x	x	x		x
PSM	(Agichtein *et al.* 2008)	x		x			
	(Burtch *et al.* 2015)	x	x		x	x	
	(Chai *et al.* 2011)	x		x			
	(Chen *et al.* 2010)	x	x				x
	(Chen *et al.* 2011)				x	x	
	(Cheng and Nault 2012)	x					
	(Cheng and Vassileva 2005)	x			x	x	
	(Ghosh and Hummel 2014)			x			x
	(Hellmann *et al.* 2010)	x					
	(Ingawale *et al.* 2013)		x				
	(Jain *et al.* 2009)						x
	(Kim and Han 2009)		x				
	(Lee and Kim 2017)		x				
	(Lee and Whinston 2015)	x			x		
	(Lin *et al.* 2012)	x		x			
	(Ling *et al.* 2005)				x	x	
	(Petz *et al.* 2013)	x	x				
	(Wang and Cheng 2010)				x		
	(Wang *et al.* 2012)	x	x			x	
	(Wang *et al.* 2017)				x		
	(Wiertz and de Ruyter 2007)	x	x		x	x	
	(Yaari *et al.* 2011)	x		x			
	(Zheng *et al.* 2015)	x		x			x

The papers are analyzed and grouped according to these two aspects and classified based on the PSM or ESM relation. For the first group, “measures,” this clustering resulted in a typology consisting of four measurement concepts: textual-, content-appraisal-, network-, and author-based. The second group, “approach,” is divided into approaches that deal with motivational and localization aspects. The four identified measures will be described in a brief summary.

Textual-based measures address visible textual features of UGC to assess the quality of the content. Metrics such as spelling errors, length of the text, reply similarities, complexity of the vocabulary, use of slang, or correct punctuation can be identified as proxies for UGC content quality (Agichtein *et al.* 2008; Lee and Whinston 2015; Lin *et al.* 2012; Mettler and Winter 2016; Petz *et al.* 2013; Viol *et al.* 2015; Ye *et al.* 2016) The content-appraisal category uses a peer evaluation process by users or experts to assess the relevance or richness of UGC. In the ESM field, such measures focus on the idea generation process or the rating of knowledge sharing contributions with simple like or rating scales (Archer-Brown and Kietzmann 2018; Blooma *et al.* 2010; Malsbender *et al.* 2013; Mansour *et al.* 2011; Ye *et al.* 2016). In PSM content appraisal, measures are related to the same concept as a peer evaluation; however, the scales are much more diverse, *e.g.*, content topic relatedness, accuracy, recency, understandability, objectivity, and verifiability (Chen *et al.* 2010; Ingawale *et al.* 2013; Kim and Han 2009; Lee and Kim 2017; Petz *et al.* 2013). The network-based category considers the scalability or re-use of UGC with the network as a quality evaluation measure (Yaari *et al.* 2011). The ESM has developed roots for a comparison of related UGC using direct feedback features such as “likes” or “thread to response” ratios or text mining mechanisms such as in-text praises or “thank you” notes (Brzozowski *et al.* 2009; Viol *et al.* 2015; Ye *et al.* 2016). PSM also uses trending mechanisms such as the user dwell time on posts or negative quality detection through content abuse reporting (Agichtein *et al.* 2008; Chai *et al.* 2011). The author-based category focuses on the prestige and build-up reputation of UGC authors as quality assurance, rather than evaluating each single contribution. In the ESM field, social tagging and ESM user confirmation in particular assign a certain “expert” status to evaluate the user’s author activities based on such tags (*e.g.*, initiated topics or topic diversity and the author’s structural gap bridging potential) (Braun *et al.* 2012; Farzan *et al.* 2008; Lee and Whinston 2015; Viol *et al.* 2015; Wang *et al.* 2017; Ye *et al.* 2016). PSM also relies on the building of an author’s trustworthiness within the network through author ratings or

activity measurement systems (Chai *et al.* 2011; Lin *et al.* 2012). The identified PSM measure in each category has the potential to be transferred to ESM because they are built on the same network principles; however, the social features should be reviewed in detail before deploying them in ESM because they might contradict with business user agendas (Mettler and Winter, 2016).

With the four measure categories, the identification of quality assured UGC is possible in ESM. To utilize a targeted high-quality contribution behavior, the organization needs to create scenarios that engage the ESM users to contribute. Herein, the description of an approach that encourages the creation of high-quality UGC (motivational approach) and another approach that focuses on localizing the high-quality content (localization approach) is made. The approaches target two opposite ideas, but still complement each other. The motivational approach tries to induce the creation of an environment that triggers the motivation to create high-quality UGC before the content is actually created. The motivational aspect is induced through gamification features such as ranking systems and a status class for UGC or authors, which are either content-appraisal- or author-based systems. The authors are encouraged to earn points and increase their social status in the network through high-quality UGC contributions (Farzan *et al.* 2008). Importantly, this approach does not necessarily need monetary incentives, that inherited in the PSM field an ambivalent effect of triggering side effects like content floods. (Burtch *et al.* 2015; Chen *et al.* 2011, 2010; Cheng and Vassileva 2005; Ling *et al.* 2005; Wang *et al.* 2012; Wiertz and de Ruyter 2007). Because the employee is already financially connected, the additional financial incentivizes seems marginal, and the social status argument seems better suited for a corporate ESM context. However, here the research flied is facing a new frontier, where more research on ESM user behavior manipulation and its effect or conflict with corporate and individual norms is needed (Warnock and Gantz 2017).

The localization approach by contrast engages after the creation of UGC, in comparison to the motivational approach. This approach uses the measurement categories (*e.g.*, network- and author-based, content-appraisal, or textual measures) to market recognized high-quality content creators or UGC in an ESM platform (Turban *et al.* 2011; Ye *et al.* 2016). Nevertheless the promotion of UGC also has motivational aspects for creators (Mansour *et al.* 2011). The localization can be achieved by utilizing feedback from subject matter experts in the organization or by popular vote of ESM users (Farzan *et al.* 2008; Ye *et al.* 2016). The curation of UGC can also be achieved

through algorithms or filtering systems, *e.g.*, through negative-quality searches, separating conversational posts, spam or posts with low relevance (*e.g.*, conversational textual qualifiers or frequent repetition of text elements) from high-quality and meaningful UGC (Zheng *et al.* 2015). PSM uses the negative-quality search mainly to filter out spam, which poses a low risk in a closed and professional based corporate ESM platform; therefore, the focus will be more on identifying low-quality conversational posts. In this approach, next to a rating feature infrastructure that a motivational approach also needs, an active content review is taking place and will require more organizational engagement (Turban *et al.* 2011).

2.1.6 Discussion of Literature Review 2: Extended ESM Moderation and UGC Quality Assurance

The extended literature review has enabled us to include content quality assurance into the prior developed moderation concept. The quality assurance is critical to the success of sustaining the ESM usage in the organization. However, the study did not produce a completely new approach, but refined the initial approach under the UGC quality assurance criteria. The two identified quality approaches are located in the initial corporate guidance approach because they guide the user to high-quality UGC. Their medium corporate engagement rating for both approaches also fits the guidance approach, with a higher engagement rating for the UGC localization approach owing to the potential necessity of an expert evaluation. All identified quality identification measures fit into the localization approach and can be considered the best fit for the formulated content demand and supply conceptualization used by this study. An organization will need to develop specific user-focused localization approaches to reduce the risk of misleading localization incurred by conventional aggregation systems (Vu *et al.* 2015). The motivational approach, compared to the before described localization approach, relies not on textual measures but utilizes other measures in a gamification sense. Gamification yields mixed results in other domains, but is attribute positively in the organizational context (Warnock and Gantz 2017). The motivational aspects of gamification argue for stronger UGC encouragement because it acts as a continuous motivator instead of promoting single posts. It also calls for higher quality through the social recognition that will create mutually beneficial open UGC trades between users (Beck *et al.* 2014; Hacker *et al.* 2017b; Schöndienst *et al.* 2011).

The corporate supervision approach, which already has UGC controls proposed in its original moderation framework, also accounts for a high-quality assurance through a

simple textual UGC creation validation or prerelease content verification and rating. In this approach, instead of localizing the content, a prefiltering of low-quality content is applied, which guarantees high-quality as long as the social relevance of the UGC in the ESM platform is recognized by the reviewers (Scott 2007). This information verification contradicts with the Web 2.0 roots and could be best suited for restricted ESM areas or official department accounts (Mansour *et al.* 2011).

The employee self-organization will utilize the often standardized ESM features of content-appraisal-, network-, and author-based measures to achieve UGC quality assurance through a common set of norms in an ESM platform (Davis *et al.* 1997; Huang *et al.* 2015; Jackson *et al.* 2007; Nolte *et al.* 2017). It is questionable to achieve a high level of UGC quality assurance owing to the missing ownership norms and governance in a self-organization (Mettler and Winter 2016).

With this corporate moderation approach assessment, an organization can now select an approach that helps the organization in a specific ESM context. The intention is to use scenarios in which the specific approaches and the quality assurance measures can be utilized to provide the organization with a flexible approach to UGC moderation. Based on the need of quality assurance under a specific scenario, the approaches can be chosen and utilized to their highest degree.

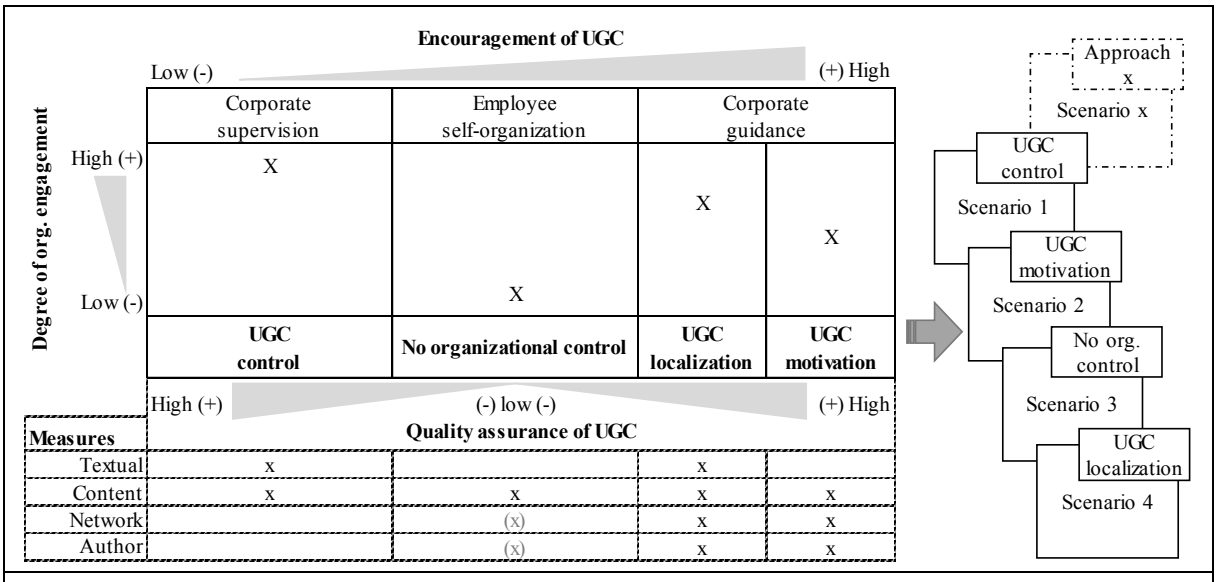

Figure 9 Extended corporate moderation approach assessment of Nolte *et al.* (2017)

2.1.7 Conclusions, Limitations and Further Research

ESM moderation is a challenging and multidimensional task for organizations. The two studies manifest the need to moderate this new organizational information and collaboration channel and establish ESM next to known traditional information channels. This is about legitimizing ESM and creating a UGC friendly environment to utilize one of the identified approaches: corporate supervision, employee self-organization or corporate guidance approach. After assuring the ESM success factor of the content contributions, the focus was shifted to another critical success factor called the content quality. The second study therefore integrated encouragement of UGC, degree of organizational engagement, and quality assurance of UGC. The extended concept highlighted the context dependent capabilities and ambidexterity of an organization to select moderation approaches based on the UGC context. In addition, four UGC quality measures were presented and allocated to each of the approaches with practical examples from the PSM and ESM research fields. The study highlighted the contradiction of UGC quality as a critical success factor and synthesized a more holistic moderation approach matrix. For practitioners, it highlights the fact that moderation efforts are indeed related and influence the UGC contribution behavior of ESM users. Furthermore, practitioners can utilize the categorization as a decision support matrix for selection of a moderation approach. The literature review contributed to the ESM research by providing a new perspective synthetizing a three-dimensional UGC moderation concept. With this generalization of the different approaches, the research built a base for future research on UGC creation and quality assurance in ESM.

Despite using a systematic literature review approach, these findings are limited to the literature reviewed. To account for this critique, the studies relied on peer-reviewed sources and also tried to represent a good mix of European and Anglo-American perspectives. However, such literature review studies run the risk of neglecting publications, particularly because a second inductive search process was not conducted. Further, owing to the young nature of this research field and the novel corporate perspective on ESM moderation at the time of the analysis, research of different methodologies, along with their practical implications, was examined. Because the studies provided only insights from a literature review, they lack confirmation through empirical data. In addition, applying the PSM findings to the ESM field could be a weakness of this research. However, the cautious discussion of such limitations of the findings and

the acknowledgement for further research, as described in the following paragraph, contribute further to scientific discourse in the ESM research field.

UGC quality in general is underrepresented in ESM discourse and needs a deeper understanding because not all findings from the PSM domain seem applicable in the ESM context. Future studies, *e.g.*, applying the method in a qualitative analysis, will be conducted to validate our evaluation and determine how the approaches depend on the maturity phase of ESM. Research suggests that there are different needs concerning the degree of corporate engagement during different implementation phases (Herzog *et al.* 2013). The organizational culture was mentioned explicitly in the employee self-organization and corporate guidance approach, and an evaluation of the impact of national culture on the perception of the moderation approach could yield further important information to extend the ESM moderation concept (Schlagwein and Prasarnphanich 2011). In addition to content quality, it is of interest to analyze in greater depth single mechanisms such as gamification that are relatively unexplored for ESM services. In a professional context, the sustained influence of such competitive methods may have unintended effects on the sharing behavior of users in the ESM. Through such processes, privacy issues may be intensified and potentially impact ESM use or conflict with acts of data protection. In particular, in the performance aspect of user ratings, the moderation of organizational ESM may reinforce privacy concerns and affect the ESM usage and conflict with data protection acts (Buettner 2015; Giermindl *et al.* 2017).

2.2 Influence of Privacy Concerns on Enterprise Social Network Usage

This chapter is based on unpublished publication titled “An Empirical Analysis of the Influence of Information Privacy Concerns on Enterprise Social Network Usage” (Guhr *et al.* 2022). This article focuses on the impact of privacy concerns on the usage intention of ESM. The novelty of the article is derived from the integration of the perceived risk, trust, and personality trait constructs into the research model. The contribution to this study as a co-author is limited to the framing of the article in the introduction, the co-writing of the discussion of the results, practical implications, and general consultancy regarding ESM. The research model and structural equation analysis were developed and conducted by the main authors.

2.2.1 Research Motivation

The implementation of ESM in an organization aims to improve the collaboration and communication of organizational members through the transparency of ESM interactions (Leonardi *et al.* 2013). The success of the ESM manifests itself with how willingly employees adopt this open and transparent IS in comparison to other more restricted and private organizational mediums, such as email or instant messaging (Berger *et al.* 2014; Buettner 2015; Giermindl *et al.* 2017). Although there have been numerous studies on the factors influencing the usage of ESM or the impact of ESM on an organization, there are only a few studies focusing on the reasons why employees might avoid ESM (Chin, Evans, and Choo 2015; Kane *et al.* 2014; Leonardi *et al.* 2013; Mettler and Winter 2016). As highlighted in the previous chapters on how to moderate ESM in a corporate context, too much organizational interference can create privacy concerns from the employee perspective. Privacy concerns with respect to ESM have received little attention, despite privacy concerns within the public social media domain being a frequent topic (Buettner 2015; Osch et al. 2015). In the ESM research field, only the study by Buettner (2015) (2015) investigated the area of privacy concerns in a first technology acceptance model based study, resulting in initial evidence that privacy concerns might play a significant role in ESM avoidance. However, the study did not evaluate the trust or risk associated with ESM use and did not differentiate the privacy concerns in greater detail. Therefore, the need for a deeper understanding regarding the intention to use ESM and the particular role of detailed privacy concerns leads to the following research question:

> RQ3: How do employees concerns for information privacy influence the behavioral intention to use an enterprise social network (ESN)?

With a deeper focus on the particular privacy concern dimensions, this study provides a rich understanding of privacy concerns with the help of concepts such as concern for information privacy (CFIP) (Teo et al. 2008a), the Internet users' information privacy concerns (IUIPC) (Malhotra *et al.* 2004), and the mobile users' information privacy concerns (MUIPC) (Xu *et al.* 2012). The study will develop a model that is empirically tested to explain the direct impact of privacy concerns on the intentions to use and the moderated impact of perceived trust and perceived risk on such intention. In addition, the study provides a moderation test on the impact of personality traits on the usage intention of ESM.

2.2.2 Research Methodology

The study statistically tests a research model with generally accepted use of a cross-sectional self-reported survey and multivariate analysis methods (Lowry *et al.* 2016). The survey was an anonymous online survey with several quality measures to preselect a representative and qualitatively acceptable sample for a data analysis, *e.g.*, no unemployed or non-ESM experienced survey participants were excluded. In total, 124 participants remained after the exclusion criteria were applied. For the analysis of the data, the partial least squares structural equation modeling (PLS-SEM) was applied for model validation and hypotheses testing, which has achieved significant adoption in several research fields including IS research (D'Arcy *et al.* 2009). The PLS-SEM was also chosen owing to fact that it allows estimating complex models with larger sized relationships and indicators or a small sample size (Wetzels *et al.* 2009). Further, PLS-SEM allows simultaneous testing of the estimation of the structural and measurement modes (D'Arcy *et al.* 2009). Nevertheless, the study executes separately two-step model testing and measurement validation. In addition, repeated indicator testing was applied to allow for the simultaneous estimation of a latent privacy concerns construct (Becker *et al.* 2012). The reliability as the necessary precondition for validity was examined using indicator loadings. Following Chin (1998), the study indicators are well above the recommend threshold of 0.70. The discriminant viability was established through a new approach, *i.e.*, the heterotrait-monotrait ratio of correlations (HTMT) (Henseler *et al.* 2015). A threshold level of 0.90 was established for the HTMT (Teo et al. 2008b). All constructs (except the second-order constructs, which are overarching constructs and do not require a necessarily discriminant validity), are between 0.082 and 0.836 and thus establish the discriminant validity of the following model. Moreover, the study provided tolerance variance inflation factors (VIFs) of 1.278 to 4.397 for each indicator, which is below the threshold of a multicollinearity problem (Hair *et al.* 2017). The full ratability, validity and multicollinearity test can be found in the Appendix A7.

2.2.3 Research Model and Findings: Enterprise Social Media and Privacy Concerns

The research model was modeled based on the following relevant privacy concerns constructs and personality traits survey tools:

- Secondary use of personal information (SUSE) is defined as requesting information for one purpose but using it for a different purpose. This construct is based on MUIPC (Xu *et al.* 2012)

- Perceived surveillance (SURV) is defined as the degree of perception of personal data collection for a user behavior analysis. This construct is based on MUIPC (Xu *et al.* 2012)
- Perceived intrusion (INTR) is defined as malicious activities of a third party with personal information that might affect user practices. This construct is based on MUIPC (Xu *et al.* 2012)
- Awareness of privacy practices (AWAR) is defined as the degree of awareness of an individual regarding the privacy practices of their organization. This construct is based on IUIPC (Malhotra *et al.* 2004)
- Prior privacy experience (PEXP) is defined as concerns related to prior negative experience of information privacy breaches. This construct is based on CFIP (Teo et al. 2008a)
- The personality traits were operationalized through the Big Five Inventory Inventory-SOEP (BFI-S) (Gerlitz and Schupp 2005)
- Perceived trust is defined as the degree to which an individual trusts in the ability of the organization to protect the users' personal information (Guo *et al.* 2020)
- Perceived risk is defined as the risk associated with the loss of personal information (Van Slyke et al. 2006)
- Intention to use is derived from the well-established Technology Acceptance Model (TAM) of Davis *et al.*, (1989)and describes the behavioral intention to use the technology or IS in question.

Privacy concerns have been frequently associated with technology use and are therefore playing a vital role in the acceptance and the intention to use a particular technology (Sipior et al. 2013; Xu and Gupta 2009). The implementation process of ESM leads to the disclosure of personal information by the user (*e.g.*, by setting up an ESM profile page) beyond the normal accessible use of personal information of the user by the organization. Hence, if privacy concerns of the user exist, it can directly influence the intention to use the ESM, and even result in ESM avoidance behavior (Buettner 2015; Greeven and Williams 2017; Osch et al. 2015). Thus, the first hypothesis is described as follows:

H1: Privacy concerns will have a negative influence on the intention to use an ESN.

Perceived trust and risk have shown to be important constructs in information privacy research (Guo *et al.* 2020). Privacy concerns and the relation to the perceived risk and

trust have been well established, and the same relationship should also apply within the ESM context (Malhotra *et al.* 2004; Pavlou 2001; Van Slyke *et al.* 2006). Therefore, the perceived trust that an ESM user places into the ESM provider to not misuse the requested personal data will be influence by the user's privacy concerns, and similarly, the perceived risk associated with the consequences of a data loss will be determined by such concerns (Malhotra *et al.* 2004; Pavlou 2001). Hence, for the ESM context a high degree of privacy concerns will result in a low level of trust in ESM and consequently be associated with a high perceived risk of information disclosure. Therefore, the following hypothesis are made:

H2: Privacy concerns will have a negative influence on the perceived trust.

H3: Privacy concerns will have a positive influence on the perceived risk.

Perceived trust and risk have proven to influence the usage intention, and both factors have been an integral point of discussion within the social networking context for user acceptance (Malhotra *et al.* 2004). Following this assumption within the ESM context, a high level of trust in the organization providing the ESM would lead to a higher change of usage, and in turn a perception of risk will result in in lower usage intention of the ESM. Thus, the following hypothesis were made:

H4: Perceived trust will have a positive influence on the intention to use ESNs.

H5: Perceived risk will have a negative influence on the intention to use ESNs.

Based on the last two hypotheses, the relationship of trust toward the risk perception becomes evident. Prior studies have shown that a high level of trust can alter the risk perception significantly and reduce the risk perception if a sufficient trust level toward the ESM-providing organization is provided, leading to a higher trust in ESM (Malhotra *et al.* 2004; Pavlou 2001). Thus, the last hypothesis to be tested is as follows:

H6: Perceived trust will have a negative influence on the perceived risk.

Following Kircaburun *et al.*, (2020) the motive of media usage is affected by the personality traits of the individual. The focus in IS research has been on public social media and the effect of personality traits on usage (Correa *et al.* 2010). Thus, the study also investigates the moderating effect of the big five inventory personality traits (*e.g.*, conscientiousness, extraversion, agreeableness, neuroticism, and openness) developed by Gerlitz and Schupp (2005) on the usage intention of ESM.

The results of the PLS-SEM model can be found in Figure 10. Four of the six hypotheses were confirmed at a significant level (H1, H2, H3, and H6 are supported, and H4 and H5 are not). The results show that privacy concerns indeed have an influence on the usage intention of ESM. The results also confirm prior findings regarding the influence of privacy concerns on trust and risk and their relationship with each other. However, the model does not support the idea that perceived trust and risk do mediate the behavioral intention to use ESM strongly. In addition, the personality trait indicators were not identified as significant moderators.

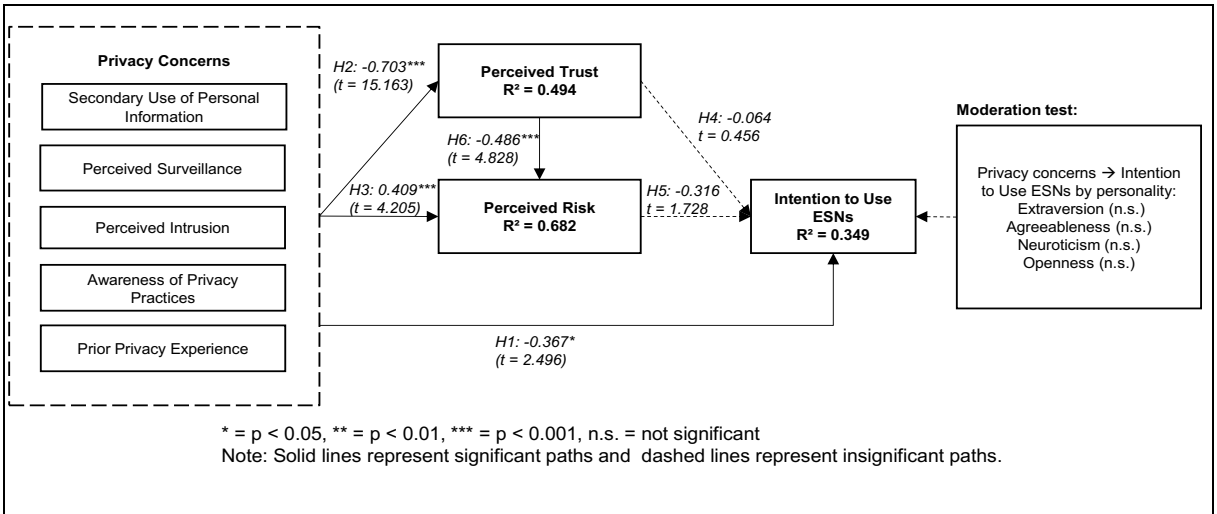

Figure 10 Results of structural equation modeling from Guhr *et al.* (2022)

2.2.4 Discussion of Results

Within the ESM context, this study is the first to take perceived trust and risk as well as the effects of personality traits into account to determine the behavioral intention to use ESM. The study confirms that privacy concerns are indeed negatively associated with the intention to use in an organizational ESM setting, similar to the study by Buettner (2015). Because the success of ESM demands content creation and information sharing from ESM users, overcoming privacy concerns is a critical success factor for ESM, particularly if it is about social connection building (Buettner 2015; Giermindl *et al.* 2017; Laitinen and Sivunen 2020; Mettler and Winter 2016; Nolte *et al.* 2017; Sun, Liu, *et al.* 2021). Privacy management options can be a way of mitigating the fear of an unknow audience; however, such features are reverting power relations back to the single ESM user and reducing the knowledge accessibility (van Osch and Bulgurcu 2020; Sun, Fang, *et al.* 2021). By contrast, privacy concerns can also help build the content quality to a certain extent because users want to manage their organizational

impression through positive posts with a goal of not being perceived as negative by the organizational members (Sun, Fang, *et al.* 2021; Vitak 2012).

The insignificance of perceived trust and risk on the intentions to use (H4 and H5) might be explained by the organizational setting and the factors of organizational trust that the study did not measure. Organizational trust has an impact on the sharing behavior of the employees in the organization, which means that, generally speaking, an individual can have privacy concerns regarding an IT artefact but individual trust in the way the organization handles disclosed data and overwrites the perceived trust and risk association of the technology (Joinson *et al.* 2010; Lippert and Michael Swiercz 2005; Ribiere and Tuggle 2005). This might also be sample related, *e.g.*, is the ESM platform an organizational branded solution or an externally branded ESM solution? Laitinen and Sivunen (2020) showed in their case study that employees distrusted a Google labeled ESM application because they projected their public social media concerns onto the platform. An organizational self-developed or branded ESM solution might have been perceived as trustful because the organizational trust component and prior information sharing experiences (*e.g.*, policies and data protection acts) have shaped the organizational perception (Khiabani *et al.* 2013; van Osch and Bulgurcu 2020). The type of information shared within the ESM might also be related to the perceived trust and risk of an individual ESM user because the information on the ESM is shared based on the work place persona and is often work issue based and therefore does not contain private information (Laitinen and Sivunen 2020; Liu and Bakici 2019). In addition, the clear relation of privacy concerns with perceived trust and risk but a missing path toward intention to use could also be influenced by the organizational culture. Should the organization have managed to establish the stewardship phenomena in the context of the ESM, it might be perceived less significant by the individual because all ESM members build upon a common rationality and work toward a shared benefit (Kolekofski and Heminger 2003; Li *et al.* 2008; Ribiere and Tuggle 2005; Teebken 2021).

The missing significant moderation of personality traits on privacy concerns and usage intentions of ESM is an important takeaway. Personality traits are generally accepted to moderate the usage intention of ESM members (Chin, Evans, and Choo 2015; Heymann *et al.* 2020). Thus, the assumption that such traits would moderate the privacy concerns in a similar fashion was surprisingly not confirmed. The study therefore contradicts prior studies that relate the personality traits directly with privacy concerns

in a commercial context (Tang *et al.* 2021). This might again be related to the organizational setting that alters the established relationships in a fundamental manner.

2.2.5 Conclusions, Limitations and Further Research

This article described the testing of a novel research model within the ESM context, including perceived risk and trust as well as the big five personality traits constructed into two privacy concerns of a driven behavioral intention to use equation. The study confirmed earlier findings of the relationship between privacy concerns and the usage intention of ESM, and relationship of privacy concerns toward perceived risk and trust. Privacy concerns negatively influence the usage intention of ESM as well as perceived trust, and thereby increase the perception of risk. The major takeaway from the study is the diminished significance of perceived risk and trust toward the usage intention of ESM, which are credited to the organizational ESM settings. The organizational settings with existing organizational trust, policies, and organizational privacy protection acts seem to diminish the significant impact of perceived risk and trust on the usage intention. In addition, the personality traits did not significantly moderate the privacy concerns.

The article is not free of limitations. The sample focused on users of ESM and might have neglected users that are avoiding ESM owing to privacy concerns. This would lead to a future research question if active ESM usage and privacy concerns are indeed related. The main argument that the organizational setting influenced the study outcome is poses as a limitation of the study and a future research opportunity. The study made the argument that organizational trust or culture, or the type of content shared, is inadequately captured by the research model. Future research should focus on different organizational components (*e.g.*, culture, trust, identification, or occupational groups) and extend the proposed research model (Giermindl et al. 2017; Leidner and Kayworth 2006). Speaking of culture, national cultural differences and the general perception of national data protection were not measured in the study. Future research should also evaluate national differences in culture, law, and policy making to gain a better understanding of the privacy concerns regarding ESM at the national level. In regard to the insignificant influence of personality traits, a more comprehensive survey to capture such traits might have delivered different results, particularly considering the general accepted opinion that personality traits have an impact on ESM usage (Bulgurcu *et al.* 2018; Chin, Evans, and Choo 2015; Heymann *et al.* 2020). The last

limitation and area of future research originate from this discussion. The study did not control for the type of ESM applied within the organization (*e.g.*, white label corporate, self-developed, or external branded platform). The perception of how an employer treats information or a prior third-party experience with ESM providers also needs further research, particular in the way a branding ESM might hold practical implications on how to diminish the privacy concerns and encourage ESM usage.

2.3 Future of Flexible Work in the Digital Age: Bring Your Own Device Challenges of Privacy Protection

This chapter is based on study of Degirmenci *et al.* (2019) "Future of Flexible Work in the Digital Age: Bring Your Own Device Challenges of Privacy Protection" published in the VHB- JOURQUAL 3 "A"-rated conference proceedings of the Frothiest International Conference on Information Systems. The article was accepted and presented in the "Mobile, IoT, and Ubiquitous Computing" track that focused on explaining the challenges and expectations that the digitalization brings into the lives of users. The conference was held in Munich, Germany on December 15-18, 2019. The article investigates the privacy concerns of individuals in relation to the increasing trend of BYOD as part of the digitalization efforts of companies all around the world.

2.3.1 Research Motivation

BYOD allows employees to utilize private IT devices (*e.g.*, smartphones or tablets) for work purposes (*e.g.*, work email access or work cloud storage and databases) (Lee *et al.* 2017; Loose *et al.* 2013). The adoption of BYOD is beneficial from two perspectives. First, it enhances employee availability, and therefore the flexibility and mobility of the workforce for corporations. Second, employees may work from home or on the road as a consequence of this flexibility, resulting in increased job satisfaction as BYOD serves the current employee desire for flexible work arrangements (Niehaves *et al.* 2012). Despite its benefits, BYOD creates new challenges in the corporate ecosystem because it redefines the organizational relationship between an IT organization and employees (Niehaves *et al.* 2012). To guarantee data security of an organization, mobile device management (MDM) solutions are utilized to integrate, manage, and monitor the employee devices within the organizational IT infrastructure. Consequently, MDM allows an organization to track or restrict the activities of its employees and there-

fore creates a potential privacy intrusion for private employee data justified by the protection of data sensitive to the organization (Schmitz *et al.* 2016). This study investigates privacy concerns based on the following research question:

> *RQ3: How do companies deal with employee privacy concerns regarding the introduction of BYOD and what is the impact of an employee's privacy calculus of the risks and benefits associated with the usage intention of BYOD mobile devices?*

The study provides a novel perspective to IT usage and privacy concerns, focusing not on the consumer perspective (*e.g.*, Zhang *et al.* (2018), Wottrich *et al.* (2018)), but instead the qualitative perspective of the work council on privacy concerns, and empirically validates if such concerns are justified based on individual privacy matters. In addition, owing to the applied three-country study approach, it will provide insights into cultural differences in regard to privacy concerns and risk benefit relations of BYOD.

2.3.2 Research Methodology

The study was designed in two parts. First, two case studies of multinational organizations are described, in which the implementation of BYOD was critically reviewed by the organizational work councils to answer the first part of RQ 3. To answer the second part of RQ 3, the research model and hypothesis were developed based on the qualitative findings of these cases and the privacy calculus theory of Laufer and Wolfe (1977), which is widely used in IS research (Dinev *et al.* 2006; Keith *et al.* 2015; Kordzadeh and Warren 2017; Teubner and Flath 2019). Based on this theory, a research model and survey were designed using the fowling constructs and survey sources:

- Privacy Concerns (PCO); from Pavlou *et al.* (Pavlou et al. 2007)
- BYOD Risks (RISK) from Pavlou *et al.* (Pavlou et al. 2007)
- BYOD Benefits (BEN), from Davis (1989)
- BYOD Attitude (ATT), from Nysveen *et al.* (2005); Taylor and Todd (1995);
- BYOD Intention (INT), Sources: Venkatesh and Davis (1996); Oliver and Bearden (1985)

The survey was executed in the three named countries. The survey results and research model were validated using structural equation modeling (SEM). SEM can be categorized into two approaches: covariance-based SEM and variance-based SEM

(Jöreskog and Sörbom 1982). The first approach assesses the sample covariance or correlation matrix consistency of a specified research model (Jöreskog and Sörbom 1982). Software tools are utilized to assess the maximum agreement between predictors and correlation matrix, which means that approximations are improved until no suitable improvement is possible (Reinartz *et al.* 2009). A PLS or variance-based SEM approach takes a different approach. Variance-based SEM is more appropriate compared to covariance-based SEM, when the focus is on theory development, prediction of latent constructs, and identification of the relationships between them, and the sample size is relatively small (Reinartz *et al.* 2009). PLS is defined as a causal modeling technique that maximizes the explained variance of the dependent latent construct defined in a theoretical model (Hair *et al.* 2011). Although changes in the latent construct of the reflective models cause changes in the indicators, changes in the indicators in formative measurement models cause changes in the value of the latent construct (Hair *et al.* 2011).

In this study, SEM was conducted using PLS path modeling to model the multivariate relationship between predictors and the criterion variables (Chin 1998). To evaluate the reliability of the model, the following test was conducted:

1. Factor loadings for predictiveness of the model ranged between 0.68 and 0.95 on their respective constructs (Chin 1998).
2. Cronbach's alpha ranged between 0.87 to 0.94, and the composite reliability (CR) ranged from 0.94 to 0.96, meeting the recommended values for constructing a reliability of above 0.70 (Gefen *et al.* 2000).
3. The average variance extracted (AVE) ranged between 0.72 to 0.88, meeting the recommendation of a lower limit of 0.50 for convergent validity (Fornell and Larcker 1981)
4. Discriminant validity was observed when cross-loading the model and evaluating the Fornell-Larcker criterion through a correlation matrix examination, which proved that the correlation of the construct with all other constructs in the model is lower than the square root of the AVE for each construct (Fornell and Larcker 1981).

Table 12 Correlation Matrix for Fornell-Larcker criterion evaluation

	PCO	RISK	BEN	ATT	INT
Privacy Concerns (PCO)	**0.85**				
BYOD Risks (RISK)	0.60	**0.92**			
BYOD Benefits (BEN)	–0.05	–0.17	**0.91**		
BYOD Attitude (ATT)	–0.25	–0.42	0.58	**0.89**	
BYOD Intention (INT)	–0.25	–0.39	0.48	0.73	**0.94**

2.3.3 Research Model and Findings: BYOD and Privacy Concerns

To answer the first part of RQ 3, the study evaluated two case studies in which the organizations had recently implemented BYOD. Both studies highlighted that the work councils, as employee representatives, had formulated major privacy concerns at the beginning of the implementation process. As the main concerns, the employer could install permanent performance measurements and receive access to private employee information. In both cases, the organization made agreements that the MDM access would not be utilized for performance measurements and that private information that might be obtained in the process cannot be used by the organization. In addition, the work councils in one organization reclaimed the right to audit the MDM usage and information retrieval of the organization. Thus, to alleviate the concerns, formal agreements and checks and balances were implemented to create certainty about the usage of private information under the BYOD scenario.

After establishing with the proxy of work councils that privacy concerns exist, the further study part builds upon the privacy calculus evaluation of RQ 3. The privacy calculus assumes that an individual's privacy concerns are prompted by a risk-reward analysis, and if the rewards outweigh the associated risks, the likelihood of disclosing private information increases (Xu *et al.* 2009). In the BYOD context, through MDM, the employees are confronted with a situation in which the employer has access to private information (*e.g.*, GPS data, photos, and private messages). This potential intrusion and the two case studies provide the assumption that MDM in the BYOD context can increase the likelihood of employee privacy concerns and negatively influence the risk assessment in the privacy calculus (Smith *et al.* 2011). Therefore, the first hypothesis is proposed as follows:

> H1: Employee privacy concerns have a significant impact on their perceptions of risks associated with the use of BYOD mobile devices.

Privacy risks describe the perceived fear of losses that result from the release of personal data to a third party and the privacy benefits related to the net benefits that an individual can derive from releasing such personal information (Smith *et al.* 2011). Consequently, risks and benefits can have a significant influence on how employees perceive BOYD and the potential related reduction of privacy through MDM. Therefore, the second and third hypothesizes are as follows:

H2: Employee-perceived risks have a significant impact on the attitude toward using BYOD mobile devices.

H3: Employee-perceived benefits have a significant impact on the attitude toward using BYOD mobile devices.

Following the theory of reasoned action by Fishbein and Ajzen (1975) and the IS research derivation of Davis (1989), the attitude regarding a certain behavior influences the final behavioral intention of an individual. Therefore, the fourth hypothesis in a BYOD context is formulated as follows:

H4: Employee attitudes toward using BYOD mobile devices have a significant impact on the intention to use such devices.

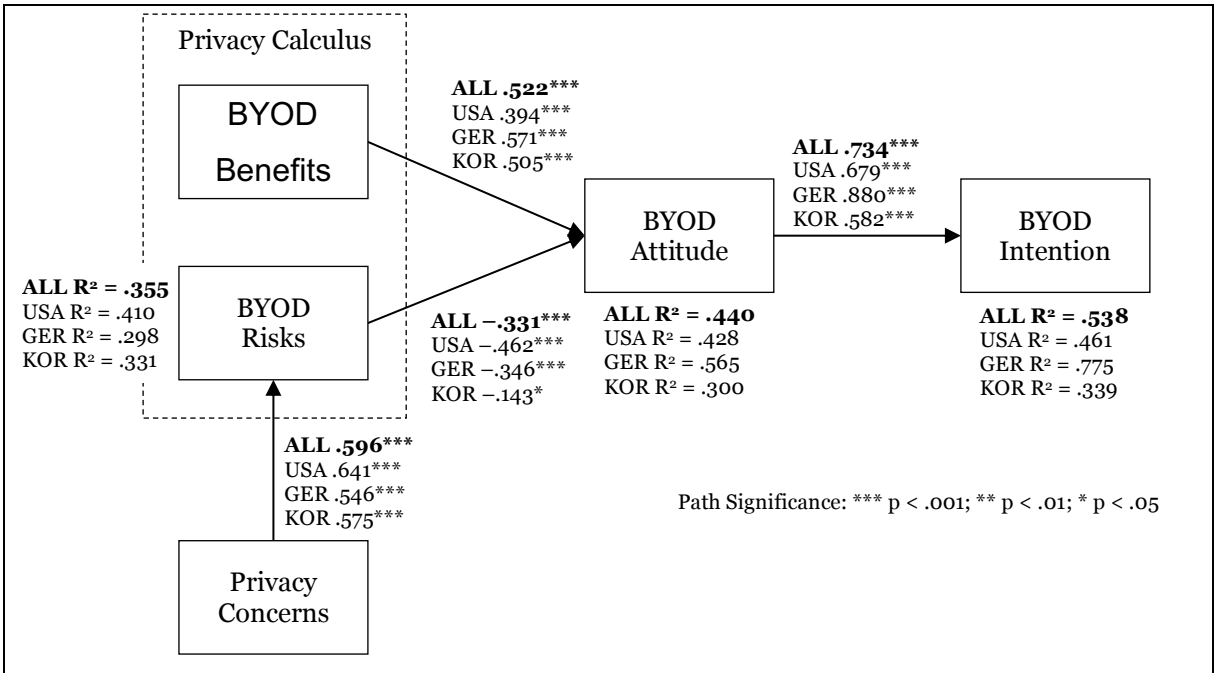

Figure 11 Results of Structural Equation Modeling from Degirmenci *et al.* (2019)

The research model and results from the structural equation modeling can be seen in Figure 11. All hypotheses, H1 ($\beta = 0.596$, $p < 0.001$), H2 ($\beta = -0.331$, $p < 0.001$), H3

($\beta = 0.522$, $p < 0.001$), and H4 ($\beta = 0.734$, $p < 0.001$) are supported at a significant level. The country specific evaluation shows a similar influence for all three countries between privacy concerns and BYOD risks, whereas the privacy calculus shows a different importance of BYOD benefits for Germany and South Korea versus the higher importance of BYOD risks for the US in comparison to the other two countries.

2.3.4 Discussion of Results

The study highlights the fact that the concerns of the work councils in regard to privacy are shared by the employees and can therefore influence the BYOD success in an organization. Privacy concerns indeed influence the construct of BYOD risk and explain 35.5% of the variance. However, the study highlights significant differences between the different national samples. Using Hofstede *et al.*'s (2010) cultural dimensions (see Figure 12) helps explain why the differences exist in the samples. In particular, the dimensions of power distance (*e.g.*, affinity to top-down power structures) and the individualism (*e.g.*, affinity to follow one's own goals and the right to privacy versus collective goals and greater societal involvement) help explain the differences in the privacy calculus among the three countries. Compared to the United States, South Korea and Germany are more collectivistic cultures, which explains the higher influence of BYOD risks, and a collectivistic country such as South Korea is more likely to have those who share information with their support network in comparison to individualistic users from the United States (Hsee and Weber 1999). For the power distance dimension, the study observes that the country with the lowest score, *i.e.*, Germany, has the highest attitude toward BYOD intention, and that South Korea, with the highest score, has the least attitude in this regard. This relates to the higher importance of an individual's opinion regarding the decision to utilize BYOD versus a management mandate to do so, for example. However, the small variance of 33.9% in the South Korean sample suggest that there might be other influences, like BYOD work-life balance research (see *e.g.,* Köffer *et al.* (2014)), which might have delivered higher results.

	Power Distance	Individualism	Masculinity	Uncertainty Avoidance	Long-Term Orientation	Indulgence
South Korea	60	18	39	85	100	29
Germany	35	67	66	65	83	40
United States	40	91	62	46	26	68

Figure 12 Cultural dimensions of based Hofstede

In addition, the results of this study and the described cases highlight the need for employee and employer agreements, which can reduce the employee concerns (Chang *et al.* 2015). In this context, the organizational culture has shown to interrelate with the national culture and might result in different outcomes depending on the trust and flexibility orientation level of the organization that wants to implement the BYOD (Chang *et al.* 2015). The regulatory implications from the study can help as a starting point if the European Union's General Data Protection Regulation (also known as GDPR) or California Consumer Privacy Act (also known as CCPA) in the United States help to reduce the privacy concerns through a legal framework. It remains to be evaluated whether these external regulatory initiatives present an influence factor on the employee perception of BYOD privacy concerns.

2.3.5 Conclusions, Limitations and Further Research

This study investigated the increasingly utilized BYOD implementation trend of an organization's pursuit of a flexibilization of the work environment. The study investigated the impact of privacy concerns on the employee intention to use BYOD. In the two case studies, the work councils formulated privacy concerns with the implementation of BYOD. To react to these concerns, organizations have implemented formal agreements about the use of private information and implemented checks and balances to reduce such concerns. Based on this finding, a research model was built on the privacy calculus theory and the theory of reasoned action. A survey was executed in three culturally differentiated countries (United States, Germany, and South Korea) to investigate the influence of privacy concerns on the privacy calculus, as well as the impact of the privacy calculus on attitudes toward BYOD and ultimately its usage intention. The survey of 542 employees showed that the privacy concerns have a significant impact on the BYOD risk perception and therefore influence the attitude and intentions to use BYOD. A further study showed differences in importance of BYOD risk between the three countries, with the United States valuing more strongly the impact of privacy concerns on BYOD risks. The study discussed such cultural differences with the help of Hofstede's cultural dimensions. Overall, the study highlights the importance of the growing work flexibility desired by employees and organizations, which leads organizations to apply MDM solutions for corporate data protection and implement BYOD policies to reduce privacy concerns by its organizational members.

As one limiting factor of the study, only three different countries were evaluated, and as such, a generalization beyond the evaluated cultures is not possible. In addition, Leidner and Kayworth (Leidner and Kayworth 2006) argue that different organizational layers interrelate with the national culture and vise-versa. Further, the use of Hofstede's cultural dimension index from 2010 can neglect changes in national culture, which is to a certain extent unlikely as cultural changes take a longer time to manifest themselves (Tang and Koveos 2008). Although the interpretive nature of the case studies with two multinational companies centered in Germany might not be generalizable, it provided the study with a real-world problem and solution description example. Therefore, it is possible that the description of the cases and the findings might have resulted in different solutions and discussion outcomes in other organizations.

Based on such limitation, further research should focus on the impact of organizational culture and on the perceptions of privacy concerns to provide an alternative implementation assessment for organizations. Related to this and the rather general agreements obtained in the case study, there is a need to understand what types of personal information actually trigger such privacy concerns. This will allow a better understanding of which information needs protection, and can improve the organizational policies or even illustrate how country data protection acts can be improved. Further, because studies on the balance between work and life was not considered in this study, it would be interesting to evaluate how such constructs under the assumption of cultural differences affect the perception of BYOD. In addition, to create a deeper organizational understanding, future research should focus on other BYOD cases in organizations located in different countries or on organizations that have rejected BYOD solutions.

3 Enterprise Social Media at the Shop Floor – Current and Future Challenges of IS-induced Change

This chapter combines research conducted during 2018 to 2020. It consists of one unranked journal publication in 2018, a “D” ranked publication in 2019, and an “A” ranked conference proceedings paper published in 2020. In the extended discussion part, unpublished research results as a part of an ongoing research project are presented.

The overall research motivation for this chapter was based in the lopsided ESM research discussion that puts knowledge workers at the center of the research discussion but neglects the specific needs of other organizational users (Giermindl *et al.* 2017). Further research will first analyze professional diversity and its influence on ESM acceptance. Based on the literature foundation, a specific look at SFWs will be taken, who, with their radically changing work environment, are interesting research subjects on how ESM can help enable a more digitally integrated shop floor (Autor 2015; Hannola *et al.* 2018).

3.1 Enterprise Professional Diversity and Challenges for Social-Collaboration Technologies – A Literature Review

This chapter is based on a research article titled, “Enterprise Professional Diversity and Challenges for Social-Collaboration Technologies – A Literature Review,” by Guhr *et al.* (2018). The article was published in the unranked *International Journal of Business and Social Science*, Volume 9, Number 1, January 2018. The literature review serves as an initial assessment of the impact of professional diversity on the usage potential of ESM in other areas, followed by the knowledge work profession, which builds the basis for later research focus on SFWs. It includes studies within the IS domain, general management, and cultural diversity research published from 1986 to 2016.

3.1.1 Research Motivation

Based on our prior research, it became clear that, to facilitate its organizational role as a knowledge and collaboration tool, ESM needs to be implemented widely throughout the organizational levels and expose its users to widespread information and relational ties (Chin, Evans, and Choo 2015; Cummings 2004). The research in this field is mainly focused on a specific user group, *i.e.*, knowledge workers, and the effect that ESM has

on their performance (Ali-Hassan *et al.*, 2015; Kuegler *et al.*, 2015; Herzog and Richter 2016) or the factors that motivate them to engage with ESM platforms (Singh *et al.,* 2014; Buettner, 2015; Urbach *et al.*, 2015; Kügler and Smolnik, 2013; Mettler and Winter, 2015; Chin *et al.*, 2015). However, this focus of knowledge workers hinders our understanding of whether ESM can truly serve as the promised next-level collaboration and knowledge sharing revolution for all professional groups in an organization (Denyer *et al.* 2011). Inserting this new technology in organizational areas that have little to no exposure to knowledge work and ICT, such as a shop floor environment, could affect the current understanding of the usage intention of ESM (Giermindl *et al.* 2017; Hopp *et al.* 2009; Kleindienst *et al.* 2016; Sauer 2014). The lack of a professional diversity assessment and the omnipresent professional diversity challenges of organizations led us to the following theoretically and practically relevant ESM research gap:

> *RQ6: "How is professional diversity influencing the ESM intention to use of employees?"*

Theoretically, adding professional diversity to ESM will broaden the understanding of ESM as an organizational spanning knowledge sharing tool, and provide a more detailed ESM implementation guidance for different professional groups. To answer this research question, the TAM introduced by Davis (1989) and Davis *et al.* (1989) is used in its extended version developed by Venkatesh and Davis (2000), that accounts for socially influenced and cognitive instrumental processes. Although the TAM is an established IS model based on the theory of reasoned action, the impact of professional diversity on the usage intention is underrepresented in technology acceptance research (Sun and Zhang 2006). This decision to utilize the extended version as our research foundation was made because the extension of the original TAM introduced subjective norms and job relevancy as influenceable variables for the perceived usefulness variable. Our professional diversity operationalization is based on the educational and functional background of persons that defines the interpretation and information processing capabilities based on professional work experience and social integration (Anteby et al. 2016; Harrison and Klein 2007; Schein 1996).

3.1.2 Research Methodology

In this research, again the literature review approach of Webster and Watson (2002) is used as a structured heuristic to uncover prior research and synthesize new con-

nections and insights based on the research framework (Schryen 2015). Although focused primarily on highly ranked IS literature outlets, owing to the novelty of the ESM research field and the interdisciplinary nature of IS research (see Keen, 1980), recognized IS conferences (*e.g.*, ICIS or ECIS) and highly ranked general management and cultural research field journals were included in the literature search process. The databases of AISeL, ScienceDirect, IEEEXplore, JSTOR, SpringerLink, ACM, Wiley, Emerald, and InformsOnline were searched. To further extend the basis, a forward and backward search was conducted based on the following search terms: “enterprise social media,” “enterprise social network,” “enterprise social software,” and “enterprise social networking” in combination with “job category,” “job diversity,” “occupational culture/diversity,” “professional culture/diversity,” and “job characteristics.” In addition, a forward and backward search was conducted to avoid neglecting relevant related studies, as suggested by Webster and Watson (2002). The initial ESM focused literature search produced a low number of results (*e.g.*, only six hits at ScienceDirect) with limited insight on the research question. Therefore, search was expanded to include concepts such as “technology acceptance” and “technology adoption.” In total, 110 articles (51 in the IS field and 59 in other research domains) were identified. After reviewing the articles, 61 had relevant insight for a discussion on professional diversity clustered by the task characteristics (*e.g.*, IS or ESM fits into the task bundle of a professional) and culture (*e.g.*, the occupational subculture promotes open information sharing). The majority of articles focused on one level, without connecting the task or cultural characteristics with different organizational levels or different occupational groups within the organization. A summary can be found in Table 13.

Table 13 Literature review matrix

Outlet / Category	Different levels	One level	Total
IS Outlet	**5**	**30**	**35**
Culture	3	12	15
Task characteristics	1	14	15
Task characteristics / Culture	1	4	5
Other outlets	**10**	**16**	**26**
Culture	3	6	9
Personality		4	4
Task characteristics	4	5	9
Task characteristics / Culture	3	1	4
Total	**15**	**46**	**61**

3.1.3 Findings of Professional Diversity and Challenges for ESM

The literature review showed that task characteristics are relevant for the perceived usefulness perception of work groups, meaning that the task characteristics describe the bundle of tasks that need to be conducted. Technology in this regard is a task enabler, and therefore has an influence on the usage intention (Anteby *et al.* 2016; Cummings 2004; Henderson *et al.* 1995; Jackson *et al.* 2007; Jackson 2003; van Knippenberg *et al.* 2004; Laumer *et al.* 2016; Lucas and Spitler 1999; Pee and Chua 2016; Rice 2012; Sun and Zhang 2006; Yang *et al.* 2009). One ESM-related article by Jackson (2007) showcases that different occupational groups use blogging functions differently (*e.g.*, marketing uses comment and sharing functions for UGC, whereas engineers create original UGC). The important takeaway from the non-IS literature is the confirmation of task relevance on the intention to use a new technology.

Occupational cultures were compared to national cultures, an underrepresented research stream with only a few IS sources available (*e.g.*, Chau, Hu, 2002a, 2002b; Cheng *et al.*, 2011; Iivari and Abrahamsson, 2002; Leidner and Kayworth, 2006; Nistor *et al.*, 2014; Raitoharju and Laine, 2006; Yang *et al.*, 2009). In these sources, occupational culture is viewed as a factor that influences the interpretation of technology between different occupational groups. The differences in interpretation leads ultimately to different perceived usefulness and can result in a completely different usage intention between different occupational groups for the same technology. The theory of technology culture conflict by Leidner and Kayworth (2006) provides the most comprehensive overview and a multiple level analysis (national, organizational, and sub-unit cultural) approach. This multilevel approach is very common in the non-IS literature samples and highlights the importance of the interplay of such levels and the potential of conflicts owing to different sensemaking.

Personality traits in combination with professional diversity did not turn up in the IS literature sample despite the general integration of the TAM with personality traits. The non-IS literature review sample produced some interesting insights because TAM constructs such as job relevance or perceived usefulness were referenced. As the main finding, personality traits influence the job selection and job performance of specific individuals in occupational groups (Andon *et al.* 2010; Barrick and Mount 1991; Broughton *et al.* 1991; Hurtz and Donovan 2000; Nieken and Störmer 2010; Salgado 1997).

3.1.4 Discussion of Professional Diversity and Challenges for ESM

The study identifies a need for a multi-level analysis of technology acceptance and usage in the IS literature. In accord with Burton-Jones and Gallivan (2007), the research highlights the IS literature focus on single-level evaluations and the fact that the more mature literature from the reference outlets is interrelated with the discussion on the technology usage at several organizational levels. For the evaluation of professional diversity and its impact on ESM acceptance, the study proposes (see Figure 13) a generic evaluation framework based on the three identified professional diversity variables: task characteristics, occupational culture, and personality traits.

The task characteristics that ESM supports can be measured based on the degree of non-structuredness. The ESM tools are meant to help bridge structural gaps in the organization and diffusion knowledge for all organizational members. The main beneficiaries of ESM are currently knowledge workers who are confronted with a high degree of unstructured work tasks. By contrast, SFWs often still conduct routine tasks that do not need digital collaboration, and thus groups with routine tasks would not derive a high PU from ESM. Although knowledge workers would be much more inclined to use ESM because they derive PU from such use, the net benefit of changing from one technology to ESM still needs to be positive to make the effort toward such change more reasonable (Chin *et al.*, 2015; Huang *et al.*, 2015; Leonardi, 2014, 2015; Treem and Leonardi, 2012; Treem, 2014). Occupational culture has an impact on the ESM usage intention based on the cultural artefact that ESM represents. ESM promotes openness, accountability, collaboration, and visibility (Chin *et al.*, 2015; Huang *et al.*, 2015; Leonardi, 2014, 2015; Treem and Leonardi, 2012; Treem, 2014). Therefore, it is proposed that professional groups that are promoting openness and transparency and are not bound to physical interaction will be more likely to accept the properties of ESM compared to groups that work mainly with sensitive data (*e.g.*, payroll accounts) or are still relying on physical interactions (*e.g.*, shop floor employees). Personality traits are the least verified variable of our literature sample. This is mainly due to PSM research proposing openness to experience as an enabler for social media usage, but extraversion as limiting the frequency of usage (Amiel and Sargent 2004; Ross *et al.* 2009). In the ESM literature, only Chin *et al.* (2015) stated that the user's personality may be an enabler. This area is not well researched, and the findings are ambiguous in relation to the ESM context; however, applying the logic from PSM research, the degree of extraversion will determine the use.

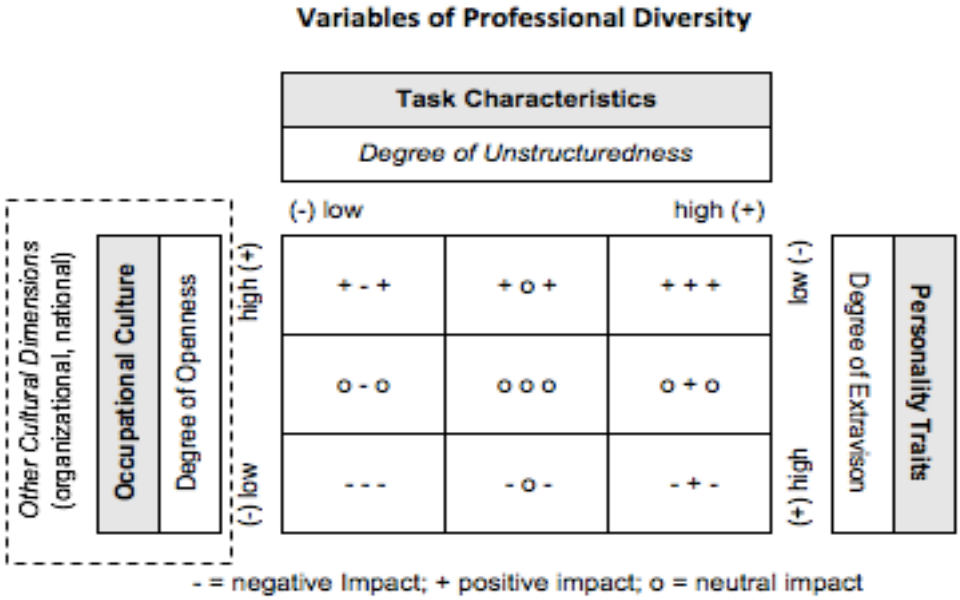

Figure 13 ESM and fit assessment of professional diversity variables

The assessment framework makes it evident that different professional groups can interpret and perceive ESM and other technologies in completely different ways. At the point of publishing this article, the connection to the technological frames of reference concept of Orlikowski and Gash (1994) was not made because the study focused on ESM from an acceptance literature perspective. The concept of making sense of technology through a reference framework could have added to the discussion, explaining in particular how different groups might be more suited to ESM use than others. As the research question was evaluated from a literature base, the study could not utilize the explorative characteristics of the technological frames concept. The technological frames perspective can be utilized to model congruent and incongruent user groups that are more likely to adopt ESM (Shaw *et al.* 1997). This represents an interesting future research area to validate the implications of the study in regard to the professional diversity needs considered for IS implementation concepts. Overall, the developed assessment framework allows the identification of fit organizational user groups and can prevent an organization from starting with hard-to-integrate user groups or allow them to better manage the changes for such groups. Organizations with a high degree of professional workforce diversity might also have employee groups that do not match these characteristics and should consider if it is the correct timing to integrate them. Theoretically, the study highlights the underrepresentation of professional diversity and a multilevel analysis in the literature on technology acceptance. The study

emphasizes that IS research needs to focus on a multilevel-analysis when examining complex and multidimensional concepts such as professional diversity. The research suggests that the perceived usefulness (PU) is a powerful construct for measuring the impact of professional diversity because both the social influence process and the cognitive instrumental process are directly moderated by professional diversity (see Figure 14)

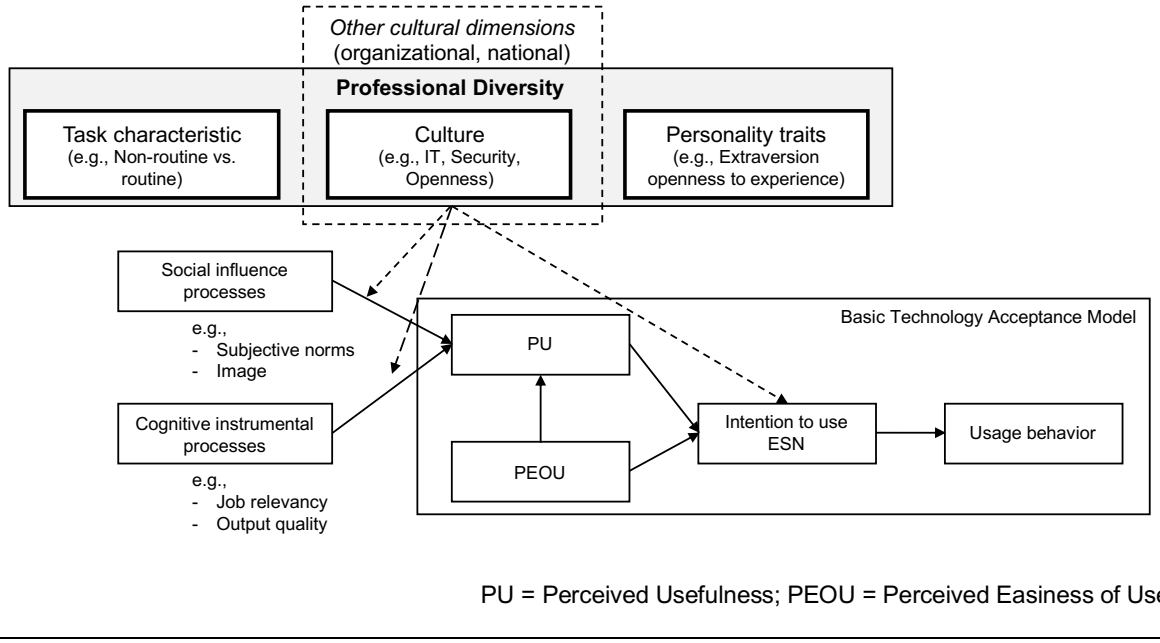

Figure 14 Proposed future TAM research model extension

Further, the study highlights that within the professional diversity domain, the shop floor environment is a particularly interesting new IS user group with unique organizational prerequisites. The shop-floor environment is at the center of fundamental change in term of its overall perception from manual labor to gradually a knowledge work environment.

3.1.5 Conclusions, Limitations and Further Research

The literature review tried to answer the research question "*How is professional diversity influencing the ESM intention to use of employees?*". From the technology acceptance literature and reference literature samples, three impact areas (task characteristics, professional subcultures, and personality traits) were derived in which professional diversity has a potential effect on ESM acceptance. The study highlights that professional diversity is a complex construct because it mixes cultural and task-based dimensions and can influence how certain groups interpret technology in a different

way. In regard to ESM, it discusses how the technology acceptance findings might affect different occupational groups. For practitioners, the research concludes that knowledge workers are the best fit in terms of the unstructured and open nature of ESM services, but that other groups such as SFWs might have a problem adapting to such new ways of collaborative digital work. Theoretically, the study highlights the need for professional diversity research in the IS domain to identify new moderating variables that can help predict better system adoption. However, this research is not free from limitations. Because the research question is answered from a literature basis, it lacks the validation with empirical data. In addition, certain articles could have been neglected in the literature search process. Nevertheless, by following the quality criteria of Webster and Watson (2002), sufficient scientific rigor in the analysis is provided to base the research synthesis on prior quality peer-reviewed studies. Future research should focus on evaluating the ESM profiles of work groups other than knowledge workers. Identifying use cases for other user groups can help to further extend the critical success factor of this research or help create new design criteria or new technology features to successfully implement ESM within an entire organization. As suggested, this future research should focus on validating the assessment of the derived professional diversity ESM.

3.2 Organizational Challenges for Enterprise Social Media and IS induced Change at the Shop Floor – A Change Model Conceptualization

This chapter is based on two research articles and includes unpublished research results that, owing to space restrictions, could not be added to the publication. The articles utilize a single case study approach and are logical extensions of the research gap for shop-floor workers and ESM identified in the previous chapter. The first article is titled, “Organizational Challenges for Enterprise Social Media at the Shop Floor,” by Nolte *et al.* (2019). It consists of an initial evaluation of an interview study with a German multinational automotive company to derive ESM challenges on the shop floor. The article was published in the conference proceedings of the 25th Americas Conference on Information Systems in “Social Media within the Organization” Mini-Track of Social Computing. The conference tracks challenges that an ESM implementation can represent within an entire organization. VHB-JOURQUAL 3 gives the conference a “D” rating. The second article, titled “The Journey towards Digital Work Empowerment -

Conceptualizing IS-Induced Change on the Shop Floor" (Nolte *et al.* 2020), was published in the VHB-JOURQUAL 3 "A"-rated conference proceedings of the 41st International Conference on Information Systems. This article utilizes the same case study dataset but adds additionally obtained case study information to synthesis a novel IS-induced change model.

3.2.1 Research Motivation

Manufacturing companies with shop floor jobs (or blue-collar jobs) are facing significant challenges due to a digital transformation of the workplace (Autor 2015; Hannola *et al.* 2018). The work environment of SFWs is dominated by manual labor, and repetitive tasks are being transformed through automation and a new IS work environment in which innovation, flexibility, problem solving, digital communication, and collaboration have become the norm (Guhr *et al.* 2018; Hopp *et al.* 2009; Kleindienst *et al.* 2016; Sauer 2014). With those changes to the work environment, the empowerment of SFWs has become a significant challenge for organizations because they need to grant access to IS to enable information access and allow communication with the rest of the organization (Hirzel *et al.* 2017; Psoinos *et al.* 2000). The current revolution of the shop floor (*e.g.*, Industry 4.0) is a well-accepted research subject; however, the integration of the shop floor workforce in an organizational ICT and their coping with empowerment is surprisingly underrepresented (Lipiäinen *et al.* 2014). To successfully manage the digital transformation on the shop floor, organizations must acknowledge that the perception of the shop floor is changing from routine workers to empowered operational knowledge providers, and new concepts are needed to integrate this often "digitally forgotten" part of an organization. In this regard, ICT can help an organization make the transition from a fully disconnected shop floor to an integrated knowledge providing organizational group (Campatelli *et al.* 2016; Leyer *et al.* 2019). ICTs such as ESM can provide this integration and help facilitate the new SFW understanding of integrated knowledge providers and process facilitators (von Krogh 2012; Majchrzak *et al.* 2013). With the application of ESM on the shop floor, the less digitally empowered SFWs will inevitably be subject to an empowerment process (Leyer *et al.* 2019). As the current body of knowledge neglects the challenges of professional groups other than knowledge workers or similar white collar jobs, it might be a particular challenge to insert an ICT as a part of the empowerment process into the shop floor (Giermindl *et al.* 2017; Leonardi *et al.* 2013; Treem and Leonardi 2012). To gain a deeper understanding of a non-knowledge worker user group and to review the challenges of ESM

in a not yet fully digitized work environment, the first two-research question are of importance for both theory and practice:

> *RQ5: How do shop floor workers perceive their ICT integration and how can they utilize ESM?*
>
> *RQ6: How does ESM empowerment result in organizational challenges at the shop floor level and how can the task profile of shop-floor workers influence the ESM integration?*

This will advance theoretically the critical success factors for ESM and generate use cases for potential ESM empowerment. In addition, this chapter will explore if the shop floor can be considered a heterogeneous or homogenous workforce and assess the ESM implementation complexity for organizations (Orlikowski and Gash 1994).

Having assessed the SFW profiles and challenges of ICT, and in particular ESM at the shop floor level, the change management necessities have not been fully addressed. If SFWs are hesitant to adopt to a new IS, they will only have limited success in adopting to the new job requirements and the organization will struggle to tap into this new knowledge source (Campatelli *et al.* 2016; Richter *et al.* 2020). This is a particularly difficult scenario for an organization because the main drivers of change on the shop floor are new IS and production technologies (Autor and Dorn 2013). During this digital transformation, organizations have to overcome both work practices and mindset changes at the same time. To complement the prior SFW evaluation and the quest of an organization to empower SFWs, the interplay of IS-induced changes on different levels of organizational change will be addressed by RQ7 of this chapter:

> *RQ7: What is the role of organizational practices and organizational mindset in the context of IS-induced change aiming to empower shop floor workers?*

By addressing these three research questions, it is possible to give a profound review of the “digitally forgotten” SFWs and their critical success factors for a digital transformation and synthesize an organizational IS change concept.

3.2.2 Research Methodology

This study used a qualitative methodology to address the underlying research question and elaborate on a theory. Qualitative methods are well suited and valuable for investigating dynamic processes in an organization (Maitlis 2005) because they are sensitive to the organizational context and its potential for focusing on activity sequences as

they unfold (Pettigrew 1992). Given the widely unexplored nature of the ESM research domain, particularly when focusing on SFWs, the research design utilizes a single-case study to gain a deeper understanding of the phenomena by studying them in their specific context. Despite widespread acknowledgement of the importance of knowledge sharing and communication between SFWs, research has not paid much attention to this area thus far (Hannola *et al.* 2018). Case studies are means- and process-oriented; thus, they help researchers comprehend why certain effects or characteristics occur (Meredith 1998). Furthermore, Benbasat *et al.* (1987) argued that case studies are meaningful in research areas in which the underlying research focus is on research and/or theory at a formative and early stage and in practice-based problems for which the context of an action is critical. Case studies generate insightful stories rather than statistical information. This aspect offers the possibility of a better understanding of organizational complexity (Huang *et al.* 2001). Case studies in operations management are considered particularly important in the context of the development and elaboration of theory (Meredith 1998).

3.2.3 Case Study Description and Data Collection

The research subject is a multinational automotive company with a staff of over 200,000 based in Germany. For confidentiality, the company will be referred to as “Future Work Inc.” in this thesis. Future Work Inc. faces a difficult environment owing to its diverse product range. As the main complication in the digital transformation path of the company, the manufacturing process cannot be fully automated owing to its high complexity at the current state of manufacturing technology. The workplace-of-the-future initiative of the company began in 2010, with the goal of managing the transition from a highly formalized and hierarchical office atmosphere to a knowledge-based workplace that allows digital interaction throughout all levels of the company (see Figure 15). The central goal of the program for its employees was to transform the digital workplace to provide workers with more flexibility and allow for new and more modern work styles within the company. To achieve the desired integration and change in work practices the company started a promotional campaign of its corporate culture in 2010, accompanied by the introduction of ESM in 2012 to promote a knowledge-based work style. With a volunteer “guide concept,” a stewardship-based implementation style was rolled-out throughout the entire organization.

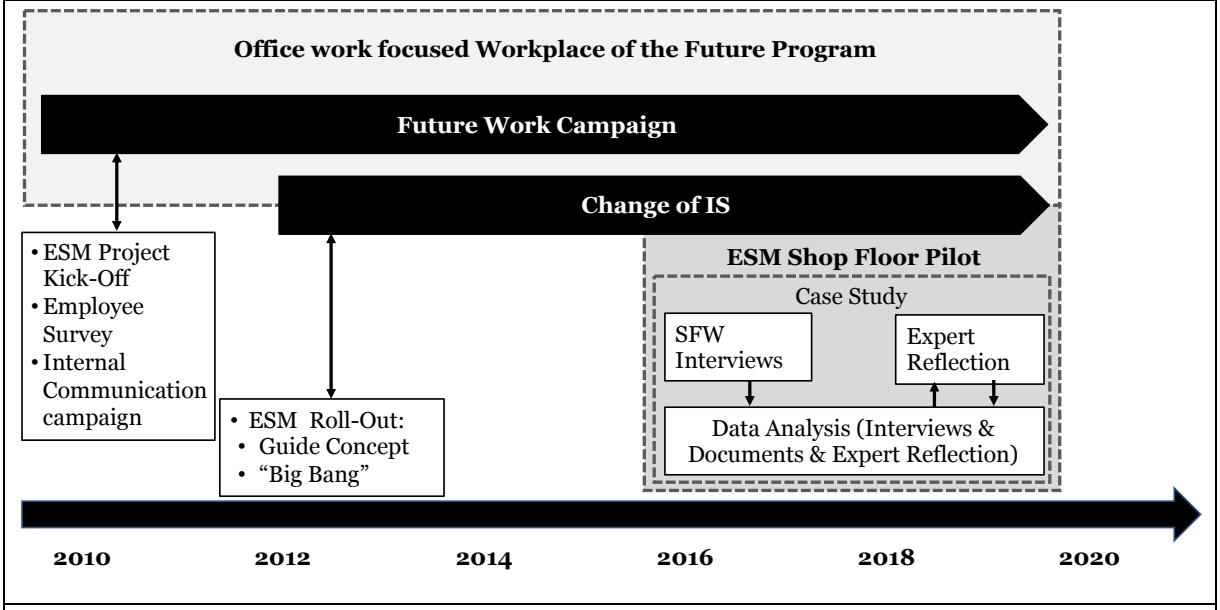

Figure 15 Case Study Overview

To achieve a company-wide roll-out for office-based workers back in 2012, the work council demanded that the ESM platform also be accessible to disconnected SFWs at this stage of the digital transformation. In 2016, the first ESM pilots for SFWs were initiated and failed to produce the engagement and usage levels that the same ESM platform has reached for an office-based environment.

Through an established research relationship with the case organization, access to a revelatory and common case was enabled and utilized for data collection (Gregory *et al.* 2015; Yin 2018). As shown in Figure 15, data were collected in three different ways during the stages of the digital transformation of the case subject. First, internal communication and project management materials were sighted to provide context and a timeline of the digital transformation. Second, semi-structured, recorded, and transcribed interviews were conducted with 24 SFWs in two ESM pilot locations. The interview study divided the 24 SFWs into 4 profile groups, as displayed in Table 14. Different skill levels were assigned based on the prerequisites of the performed job; lower skilled jobs do not require any education or special training, semiskilled jobs require at least special training, and higher skilled jobs as well as shift supervisors require a certain level of education (*e.g.*, a craftsman certificate) and several years of job experience. The interviewees were from a diverse composition of two independent business areas and geographical locations. The majority were in the age group of over 35, and those in location "A" were all male SFWs, whereas Location "B" had a 41%

share of female participation. The interview language was German to avoid generating a language barrier. Data collection and data analysis were tightly interwoven. Data collection procedures were undertaken until further data did not provide any new insights and a theoretical saturation was reached (Eisenhardt 1989).

Table 14 Profile of shop floor interview participants

Interview	Skill level	Work assessment	Prior ESM experience	Gender	Age
INT.AB.1	Shift Supervisor	Dynamic	Yes	Male	>45
INT.AB.2	Low-skilled	Routine	No	Male	26-35
INT.AB.3	High-skilled	Dynamic	No	Male	<25
INT.AB.4	Low-skilled	Routine	No	Male	>45
INT.AC.5	High-skilled	Dynamic	No	Male	>45
INT.AC.6	High-skilled	Dynamic	No	Male	26-35
INT.AC.7	High-skilled	Dynamic	No	Male	>45
INT.AC.8	High-skilled	Routine	No	Male	36-45
INT.AC.9	High-skilled	Dynamic	No	Male	>45
INT.AA.10	Low-skilled	Routine	No	Male	26-35
INT.AA.11	Low-skilled	Routine	No	Male	36-45
INT.AA.12	Low-skilled	Routine	No	Male	>45
INT.B.1	Low-skilled	Routine	No	Female	>45
INT.B.2	Low-skilled	Routine	No	Male	26-35
INT.B.3	Medium-skilled	Routine	Yes	Male	<25
INT.B.4	Shift Supervisor	Dynamic	Yes	Male	26-35
INT.B.5	Shift Supervisor	Dynamic	Yes	Male	>45
INT.B.6	Low-skilled	Routine	No	Female	36-45
INT.B.7	Low-skilled	Routine	No	Female	>45
INT.B.8	Low-skilled	Routine	No	Female	>45
INT.B.9	Medium-skilled	Routine	No	Male	36-45
INT.B.10	High-skilled	Routine	Yes	Female	26-35
INT.B.11	Shift Supervisor	Dynamic	Yes	Male	>45
INT.B.12	Shift Supervisor	Dynamic	Yes	Male	>45

Note: AB.1= Location “A”; area “B”; Interview No. “1”

Third, the results of the semi-structured interviews were reflected by the organizational experts and the research team in a recorded discussion forum. The selected experts are head of shop floor development (HS) (in person) and the digital transformation and change manager (DT) (through a video call). The organizational roles are shown Table 15.

The interview datasets were centrally organized and analyzed using MAXQDA, which is a software tool for a content analysis. Based on the three qualitative data components, the research questions will be elaborated as follows: RQ 5 through RQ 6 will be

focused on the SFW interview study in the following two chapters. RQ 7 will be answered by integrating the SFW interviews with the expert reflection forum.

Table 15 Profile of expert round participants

Participant	Role in Organization
DT	Digital Transformation Officer – Organizational role is to facilitate a new and digital enabled work style; ESM Project Lead
HS	Head of Shop Floor Development for Division A – Organizational role is to develop and organize the SFW capabilities to fit to the manufacturing advancements

3.2.4 ESM Use Cases, Challenges, and its Empowerment Potential at the Shop Floor - An ESM Shop Floor Usage Profile

This chapter is based on the findings of "Organizational Challenges for Enterprise Social Media at the Shop Floor" by Nolte *et al.* (2019) and is enhanced by an ESM usage profile framework for a deeper discussion. The research article focuses on the need for individual psychological and structural empowerment to successfully master the digital transformation and organizational changes on an employee level (Conger and Kanungo 1988; Robbins *et al.* 2002; Thomas and Velthouse 1990). Through structural empowerment ICT like ESM can facilitate the empowerment process with its access to information, access to support, access to resources, and access to opportunities (Kanter 1979; Laschinger *et al.* 2004; Leyer *et al.* 2019). The ICT or IS induced process of empowerment consists of four stages, as indicated in Figure 16: 1) identification of organizational ICT use barriers, (2) selection of empowerment enablers/properties within the ICT to allow structural empowerment, and (3) creation of comprehensible empowerment experiences for workers to enable (4) an empowerment behavior and psychological empowerment state (Nolte, Guhr, and Breitner 2019). Based on the understanding of this empowerment process, actual use cases scenarios were elaborated on with the SFWs to identify organizational challenges and derive an SFW ESM profile.

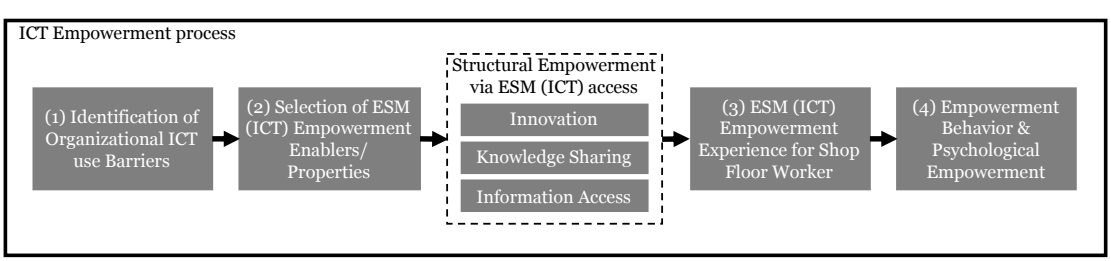

Figure 16 Empowerment process operationalization from Nolte *et al.* (2019)

3.2.5 Discussion of ESM Use Cases and Organizational Challenges

The interview sample indicated a desire for organizational and job-related information access regardless of the skill levels. To generate an initial understanding of this desire for information, the interview study aimed to derive use cases including the potential for empowerment of the utilized ESM features for the targeted skill level group and the interaction mode of the SFWs with ESM.

The first use case of “Expert Tagging” is based on the need of the medium to higher skilled SFWs to collaborate with different organizational units such as engineering or logistics. Often owing to digital disconnectedness, the workers fail to identify the right contact person, and they therefore suggest adding social tags to the ESM profiles based on the responsibility area. This will assure that workers can efficiently find the desired expert profile in the ESM platform and reach out to them.

The second use case, “My Location Value Chain,” is more concerned with the curiosity of lower skilled SFWs to uncover non-observable networks beyond their physical shop floor environment. Using a Wiki that makes the value contribution of the back-office personnel visible to SFWs, could facilitate a more integrated mindset and reduce the observed “us versus them” mentality.

The third use case, “Shop Floor Knowledge Sharing,” utilizes the curiosity of the SFWs to acquire knowledge. The SFWs on all levels stated their desire to share their knowledge and actually felt like they are in a position to provide expert insights in their own area of expertise, *i.e.*, production.

The fourth use case, “ESM Feed Board,” describes a live ESM information feed on a TV screen projected in the common areas. The desire for such a passive ESM information consumption results from the constant output performance pressure in the shop floor environment.

The fifth use case, “Location Rumors Q&A,” originates from the feeling of the lower skilled SFWs of not being in the information loop. The idea is to utilize a forum to address location rumors (*e.g.*, the closing of a parking lot) and to prevent the spreading of false rumors through a question-and-answer format. This form can also function as a feedback mechanism for location management.

The sixth use case, “Shift Info Exchange Community,” targets the need of shift supervisors to establish a second communication and information channel next to the direct

verbal communication into their shifts. Through a community, shift supervisors will allow SFWs to re-access a verbal communication in written form. This can reduce uncertainty when SFWs have a feeling of not understanding the transmitted information and raise questions that can be immediately addressed by the supervisor.

The use cases indicate that SFWs can derive a certain usefulness from ESM and assign relevance to such technology. Even a passive interaction mode can later lead to active information processing by the SFWs. The differentiation of active and passive interaction modes shows that there are certain SFW requirements that challenge the organization in different stages of the empowerment process.

Table 16 Summary of use cases and their properties

Use Case	Empower Potential	ESM Feature	Skill Level	Interaction
Expert Tagging	Information Access / Innovation	Wikis / Social Tags	Medium to Higher Skilled	Active
My Location Value Chain	Information Access	Wikis	Lower Skilled	Passive
Shop Floor Knowledge Sharing	Information access / Innovation / Knowledge Sharing	Wikis / Forums/ Communities	All Skill Levels	Active/ Passive
ESM Feed Board	Information Access	All ESM Information	Lower Skilled	Passive
Location Rumors Q&A	Information Access	Forums / Blogs	Lower Skilled	Active/ Passive
Shift Info Exchange Community	Information Access	Communities	All Skill Levels	Active

Although the SFWs were able to articulate use cases for ESM, they indicated that it was challenging for them to use ESM features in the shop floor environment. The current shop floor conditions that are still defined by clear hierarchies, fixed work, and task instructions, as well as constant output performance measurements, limited the SFWs to participate in ESM or make use of other potential ICTs. Three critical challenges were identified that are hindering the empowerment process in stages 1, 2, and 3.

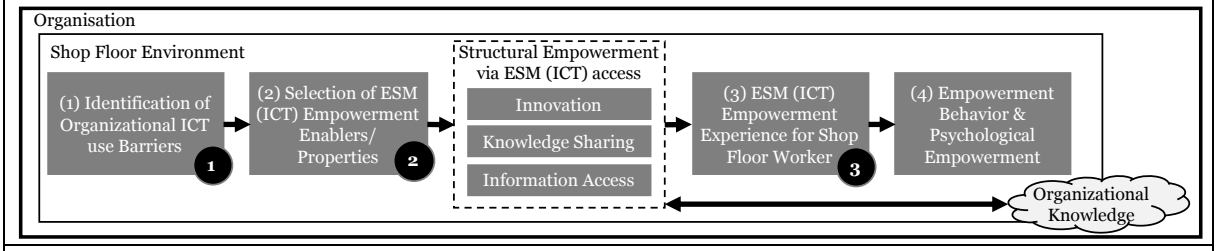

Figure 17 Empowerment process challenge pin points from Nolte *et al.* (2019)

The first challenges are the “Supporting Organizational Conditions for ESM Use.” Lower skilled workers and shift supervisors identified the constant performance pressure as a major challenge to incorporate ESM into the day-to-day operations of the majority of lower skilled SFWs. The current task organization puts organizations in a paradox position of not harming the output metrics while at the same time trying to insert the SFWs into an empowerment and knowledge work transition process. Although pushing the use of ESM to non-functional times could be an option for the lower skilled workers, it was more desired as an after-work scenario than a break room option. The medium to higher skilled workers showed a more favorable environment because they already had prior IS access and because knowledge work is part of their tasks. The different skill levels present on the shop floor add further complexity for organizations to provide supporting organizational conditions.

Should this barrier be overcome by the organization, the second challenge of “Work-centric Shop Floor User Interface Designs” will present itself. This challenge deals with an ICT interface that enables the desired structural empowerment of stage 3 during the empowerment process. In the case study, the implemented terminal solution was considered unsatisfactory because it did not meet the work practice reality of the SFWs. Owing to their specific work environment, the SFWs need an active and passive interaction modus, which was also reflected in the use cases. Passive mode is for pure information consumption in work situations that do not allow work interruptions or for work break situations and can be handled by a static user interface (*e.g.*, a monitor). Active mode will be utilized for problem solving scenarios and requires a mobile interface (*e.g.*, a tablet). In addition, an application for general company news triggered interest for private devices, allowing access during leisure time for SFWs interested in non-task related topics. The SFWs viewed the application as being complementary to both passive and active work interfaces.

With the selection of the right interfaces, organizations can ensure structural empowerment through ICT, which leads an organization to the third challenge, “Empowerment and ESM Education Needs.” This challenge concerns the initiations of empowerment experiences of the fourth empowerment process state. The case study data showed a deficit in understanding the need for empowerment and how IS access is related to this factor, particularly with lower to medium skilled workers. With education regarding the intentions of an organization on the need for empowerment and IS access, organ-

izations can create situation awareness among the SFWs that enable positive empowerment experiences. With an understanding of IS and the empowerment need, an organization can help SFWs make the step from pure task operators to operational knowledge providers of a future shop floor profile.

3.2.6 Discussion of an ESM Shop Floor Usage Profile

This chapter is an extension of the paper titled “Organizational Challenges for Enterprise Social Media at the Shop Floor” by Nolte *et al.* (2019) and contains an unpublished discussion on the identified ESM use cases and identified challenges from a worker-centric perspective when taking the skill levels of SFWs into account.

The presented study highlights critical areas, such as ICT education, work conditions, and user interface specialties that stand in the way of the successful empowerment of SFWs through social ICT. The organizational conditions of lower skilled SFWs in some areas are not compatible with the specific characteristics of ESM, thus building a natural barrier (*e.g.*, constant performance measurement). Against the background of clear work formalization and hierarchical structures, the ESM access remains a challenge. The case study data provide evidence indicating that when SFWs have a higher skill level their job characteristics and organizational conditions are more similar to those of knowledge workers. Therefore, the best option of an organization would be to implement “guidelines” promoting and creating awareness about ESM on the shop floor. However, lower skilled workers will demand special education and interfaces to cope with their not yet completely transformed work environment.

Proposition 1a*: Non-routine and knowledge work job characteristics of higher skilled workers favor ESM use on the shop floor.*

Proposition 1b*: Non-routine and knowledge work characteristics of ESM demand special implementation-focus for lower skilled workers on the shop floor.*

Higher skilled workers have less need for education regarding ESM because they already have a basic understanding of such technologies. There was still an educational deficit in comprehending the identified ESM complexity. The lower skilled workers showed a significant lack in ESM education, resulting in the major source of incongruences within the SFW samples. Special attention should thus be paid to the group of lower skilled workers. The explanation of the “what” and “why” helped lower skilled workers make sense of ESM. A more congruent sense making of technology will result in better use-case scenario designs.

Proposition 2a: *More education on ESM capabilities will lead to more congruent sense making of ESM.*

Proposition 2b: *A more congruent sensemaking of ESM will lead to better use-case creation by the SFWs.*

The complexity of ESM and missing organizational conditions will make full utilization of all ESM features impossible. Therefore, the argument can be made that a worker-centric usage profile is best suited for finding use-case scenarios, despite persisting incongruences in the sense making resulting from the distinct work organization within the shop floor environment. The case study data suggest that stationary terminal interfaces are unsuitable for meeting the needs of SFWs. Alternative interfaces, such as mobile work area devices or mobile apps for private devices, were favored. Both options are complementary because they can provide worker-centric access in any context (*e.g.*, at the workstation, in the break room, or during a commute). Higher skilled workers with their knowledge work similarities will demand more active participation and are likely to become content contributors. Therefore, full ESM access for higher skilled workers will lead to a utilization best suited for their tasks and is supported by their organizational conditions. For lower skilled workers, a more passive ESM usage is derived because their work profile is farther away from knowledge work. The focus of lower skilled workers is to consume content and not actively connect with others outside of their circle of work contacts. These workers will benefit the most from ESM features, which will inform them of happenings on the ESM platform and provide a feeling of being in the loop. This gradual integration will prevent overstrain and at the same time reduce the intra-organizational digital divide if organizational conditions (*e.g.*, the output monitoring) limit the time in which non-core activities can be performed. Providing worker-centric interfaces that premediate the interaction mode based on the interaction possibilities can reduce the decoupling of ESM access with interfaces that cannot be utilized in the given work organization.

Proposition 3: *Worker-centric user interfaces enable SFWs to use ESM and interact across the organization.*

The use-case scenarios of SFWs provide the empowerment potential for the current offline shop floor environment in three dimensions. First, the ESM will provide SFWs the possibility of sharing and retrieving knowledge outside of their usual locally closed circle of contacts. In particular, geographically distributed production sites can profit from broader knowledge-sharing opportunities. The case study data suggest that, in

the current work organization patterns, higher skilled SFWs will be significantly empowered, and that they are actively searching for such opportunities. Second, through access to organizational knowledge, SFWs can be empowered to drive innovations in their production areas. The ESM can act as an enabler for the much-needed flexibility and problem-solving capabilities demanded by a modern shop floor environment. Finally, the ESM will provide the SFWs with the demanded access to organizational information. The case study data show that access to information upgrades their status and reduces the "us versus them" attitude, empowering their position within the organization. Through the facilitation of relational ties, communication, and information by the ESM, social identifications with the organization can be increased, which can be translated into positive employer signaling in the labor market, which is valuable for attracting higher skilled labor (Backes-Gellner and Tuor 2010; Charlier *et al.* 2016).

***Proposition 4**: ESM empowers SFWs structurally and acts as a change artifact in the production and operations area.*

***Proposition 5**: ESM can close the intra-organizational digital divide by leveling inequality of digital access.*

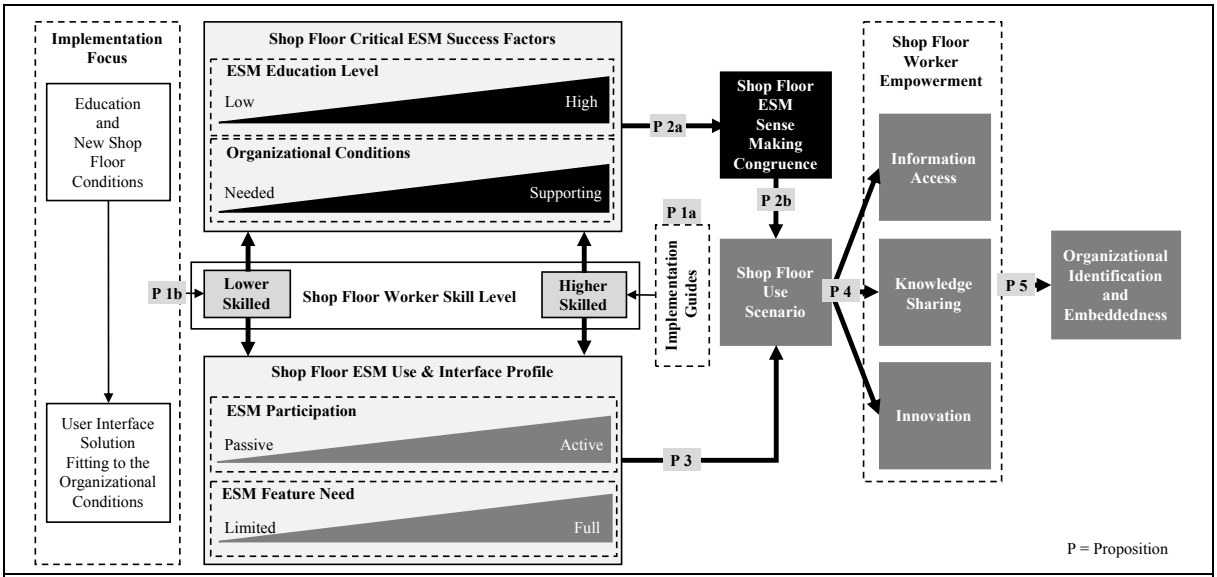

Figure 18 Shop floor worker ESM empowerment profile

Based on the sense-making of SFWs regarding ESM and the derived propositions, the following shop floor ESM framework is proposed, as shown in Figure 18. On the left side, the actual situation, starting with the implementation focus, moves over to the three challenges and the passive and active interaction modes based on the skill level

assessment. This part constitutes an SFW ESM usage profile that influences through two pathways the structural empowerment of SFWs based on use case scenarios. The ESM success factors build the basis of congruent sensemaking of the technology, leading to a positive mindset and ESM use cases. In addition, on the other path, based on a technological fit, the use and interface profile lead to work practices and the creations of use case scenarios. The use case scenarios build the actual structural empowerment opportunities on the shop floor. With the achieved structural empowerment of the SFWs, the final consequence of successfully implementing the ESM is the achievement of an organizational embeddedness and better organizational identification of such workers.

3.2.7 Conceptualizing IS-Induced Change on the Shop Floor

This chapter is based on an article titled, “The Journey towards Digital Work Empowerment - Conceptualizing IS-Induced Change on the Shop Floor,” by Nolte *et al.* (2020), which was published in the VHB-JOURQUAL 3 “A”-rated conference proceedings of the 41st International Conference on Information Systems. Motivated by the previous findings of different sense making and issues identified under the work practice conditions and mindset of SFWs, this article adds the theoretical lens of a technological frames and embeds the interview study in a holistic and longitudinal organizational change process model, answering the research question:

> *RQ7: What is the role of organizational practices and organizational mindset in the context of IS-induced change aiming to empower shop floor workers?*

Based in the theory of social construction of technology, technological frames obtain internal frameworks regarding the perception of technology by social groups that other techno-economic theories are neglecting (Olsen and Engen 2007). The concept of a technological frames is based on the study by Orlikowski and Gash (1994) and describes points of reference for technology interpretation, which are defined as “the core set of assumptions, expectations, and knowledge of technology collectively held by a group or community” (Orlikowski and Gash 1994, p. 199). The authors identified three main frame domains, *i.e.*, the nature of technology, rationality of technology, and technology use (see Table 17 for a detailed definition), which help to identify incongruences between users or user groups. As the concepts capture the underlying SFW perception

in relation to IS-induced change, a theoretical lens is provided that allows analyzing and giving meaning to the gathered data from multiple viewpoints.

Applying the concept of technological frames to the original interview study (see the summary in Table 17), showed that the SFWs are divided into two groups based on their skill level and work organization. On one side, the study identified a backwards oriented and frustrated group that consists of lower to medium skilled workers with a strong focus on routine tasks. This group had a congruent frame established within the interview sample, showing no business context understanding of the IS features, and thus could not make sense of the implementation rationality and had a problem with assigning the use scenarios. The group showed that their mindset was not ready for the intended empowerment effort of the organization, that their work practices are not yet supporting a new IS supported work style, and that providing such technology resulted in a sense of organizational decoupling. By contrast, the study identified the higher skilled workers with a higher share of dynamic and knowledge work tasks to be extremely perceptive about the IS-induced change. The grouped presented a clear understanding of the IS in the business context, they understood the structural empowerment benefits that this technology would enable, and they had clear ideas on how to make use of the technology. At the time of the study, this second more forward oriented group was in a different stage of the empowerment process. Their mindset was ready for more empowerment, their work practices were sufficiently flexible for IS use and to a certain extent already included such use (*e.g.*, digital shift protocols). Concluding the interview study, it can be stated that the organization is faced with incongruent frames at the shop floor, which produces further complexity in the IS implementation and the targeted empowerment change process.

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Table 17 Overview of Shop Floor Workers' Technological Frame Evaluation by Skill Level and Task Assessment

Technological Frame	**Frame Description**	**Frame Interpretation by SFW**	**Skill Level and Task Assessment**		
			Lower skilled & routine tasks	*Medium skilled & mainly routine tasks*	*High skilled & dynamic and knowledge tasks*
Nature of Technology	Users understanding of features that define the technology (What question)	Public social media	X	X	
		Recreational	X	X	
		Business context			X
Rationality behind Technology Implementation	Users understanding of organizational rationality behind technology implementation (Why question)	No understanding	X		
		Understanding of benefits and challenges			X
		Perceived benefits only for office workers	X		
Make Use of Technology	Users understanding of how to apply technology in use (How question)	No use	X	X	
		Enhanced collaboration and knowledge sharing			X
		Negative usage association	X	X	
		Positive usage association			X
		Face-to-face culture	X	X	
		Digital culture			X
Summary of IS-induced Organizational Change Dimension			- Mindset backwards oriented and not empowerment ready - Work practices inflexible and not IS use supporting - IS change perceived as decoupling from work reality		- Mindset empowerment ready - Work practices flexible and IS use inclusive - IS change perceived as opportunity

As the next step of the study, the organizational shop floor and digital transformation experts were presented with the findings of two groups in different phases of their IS-induced empowerment change process. The experts picked up the organizational frames (see Table 18) from the SFW evaluation: mindset change, work practice change, and IS change. The experts concluded that the shop floor transformation is not limited to the organizational change dimension at the shop floor but is interrelated with all organizational levels and members. Without having the mindset ready (including SFWs, managers, and other organizational members) and the work practices enabled, IS access alone will not trigger the desired change. The experts acknowledged that IS access is necessary for a change at the shop floor that is driven by innovative technologies and that SFWs in their private role as empowered citizens often have the abilities, but simply miss the idea at the shop floor level. Both experts recognized that there is a missing education of the empowerment need, that work practices do not yet provide the level of flexibility for broad IS use, and that the one interface fits all SFWs context was an underestimation of the complexity of the shop floor environment.

Table 18 Organizational change dimension reflection of the organizational experts

Mindset Change	Work Practice Change	IS Change
- Mindset of the organization (SFW and other members) was not prepared for more empowerment in the shop floor	- Work practices were not ready for the IS change at the lower hierarchical level of the shop floor	- IS access alone not enough, it needs to be orchestrated with work practices and mindset
- SFW are empowered citizens and even coaches for sport teams, but at the lower level of the shop floor this idea in the work context is missing	- Innovations in the shop floor technology will bring more knowledge and collaboration	- Information access via IS is a necessary first condition
- Education about empowerment need and future organizational purpose of SFW needed	- Adjustment of current work practices to allow for time, more flexibility and knowledge work tasks for SFW	- Providing differentiated IS implementation concepts and IS solutions that fit to the present and future needs of SFW

Consolidating the SFW and expert interview study findings highlights that the IS-induced organizational change is part of a time-consuming transformation process that is characterized by interactions between work practice changes, mindset changes, and IS changes. These three change dimensions exist in parallel in the organization and can be the start of the change process. During the change process the organization

will pass each dimension in stages. Based on the process journey view, the study developed a model of “Interrelations of IS-Induced Organizational Change” (see Figure 19).

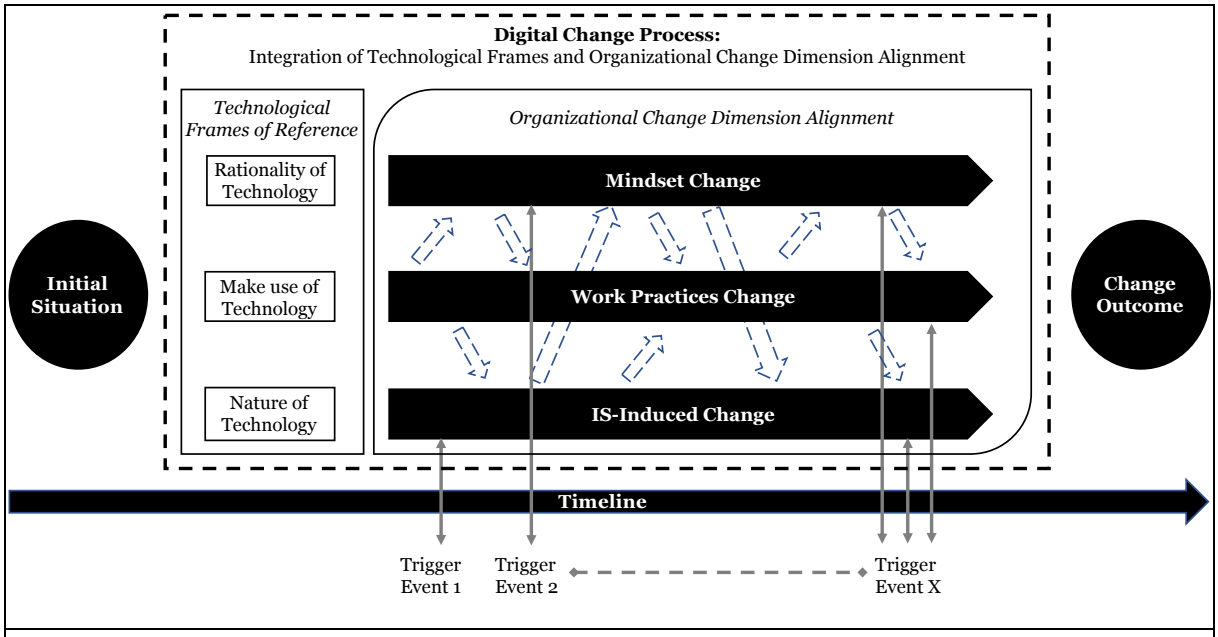

Figure 19 Model of interrelations of IS-Induced change based on Nolte *et al.* (2020)

Both organizational mindset and organizational practices play significant roles in the organizational process of empowering a shop floor but are interrelated with both each other and the IS change. Each of the change dimensions can be triggered by an event inside or outside of the organization. To complete the organizational change process, each technological frame and the related organizational frame dimension need to be successfully aligned to achieve the desired outcome. Once all dimensions have undergone their own change process, they trigger a change initialization on the other dimensions. These interrelations need to be carefully orchestrated over the time of the change process to avoid frustration or change in the decoupling effects. If the interrelations are successfully managed, it will result in changes in each change dimension, which will foster an organization change alignment. Over time, the incremental changes in each identified change dimension will gradually lead to the desired outcome.

3.2.8 Conclusions, Limitations and Further Research

This chapter used case study data from 2010 to 2019 of a German multinational company to investigate how SFWs can be digitally integrated and empowered with the help

of IS, namely, a social collaboration technology similar to ESM. The case study consisted of two interview study samples, one with SFWs and a second study with organizational digitalization and shop floor development experts. The first interview study focused on the perception of SFWs of their IS integration and their potential to utilize ESM. The study provides a first status quo assessment of an underrepresent IS user group highlighting a clear organizational digital divide. However, the interview study also showed the potential of use cases for SFWs to improve their digital integration with ESM and empowerment potential of providing digital integration. Regardless of such potential, based on an empowerment process lens, a critical discussion of current shop floor environment challenges was made to highlight the complexity of integrating and empowering SFWs. Missing organizational conditions (*e.g.*, a constant output of measuring SFWs), providing suitable and progressing IS interfaces (*e.g.*, an extremely diverse task spectrum, from stationary to mobile), were described, along with an educational need for the rationality behind empowerment initiatives and the connection to IS-induced changes. From there, the study was expanded based on heterogenous SFW sense making. A SFW social collaboration empowerment profile was derived that integrated the identified challenges and added a SFW skill level differentiation to each of the challenges and provided a first ESM implementation framework on the shop floor. The main finding was the need for a congruent sense making within the targeted SFW user group to successfully empower them structurally. The shop floor usage profile lead to revisiting the initial interviews through the lens of technological frames and provided an in-depth review of the empowerment change process. The outcome showed a clear segregation of the shop floor being in two different points in time of the empowerment process. The lower skilled workers were just at the beginning of the empowerment journey, not making sense of the technology, rationality, or usage. By contrast, the higher skilled SFWs were already partly empowered and could understand the technology and rationality and were actively using it for their benefits. With these findings, the study utilized a second interview study with organizational experts to provide a reflection space for the IS-induced change of the company towards shop floor empowerment. The expert interviews provided a distinct assessment of an organizational change dimension (mindset change, work practice change, and IS change) and the role that each dimension takes in the change process. The second study provided a model of the interrelations of the organizational change dimension. As the main takeaway from conceptualizing the change process, the role of each change dimension

can be an initiator of the IS-induced change process and that each dimension has its own incremental evolution before diffusion starts into the other dimension to trigger a change there as well. The organizational orchestration of those three dimensions determines the successful digital transformation journey toward empowerment change.

The case study research described the needs and experiences of SFWs with regard to ESM in their specific context. Thus, the empirical findings of the qualitative study cannot be generalized without a limitation of other settings or research subjects (Lee and Baskerville, 2003). The derived practical and theoretical understanding of the influence of the nature of an employee's work as a factor that favors or hinders the understanding of IS in a complex industrial organizational environment may be helpful in explaining outcomes elsewhere, particularly when the focus is on SFW empowerment and digital transformation of the shop floor. Although the case study only investigated one organization and a particular social IS, an argument can be made that the rich case study description and dataset can be transferred to different types of information and communication technology or IS-induced empowerment change processes. Although the data for this study were collected from different geographical locations and multiple divisions, this research is limited to a single company in the automotive supplier industry. The study did not investigate the effects of an existing ESM on organizational outcomes, but on the users' sense-making and how the IS-induced change toward more empowerment can be conceptualized. It is known that technologies, homophily, and proximity affect network structures and that decentralized patterns of interactions are conductive to implementation success (Sasidharan *et al.* 2012); however, little is known about the influence of different needs in the context of professional and cultural diversity. SFWs have a different claim to the functionalities and information associated with ESM and IS in general. Working environment factors play another important role. Job and performance-related remuneration make SFWs aware of IS usage barriers that do not affect other user groups, such as office-based white-collar and knowledge workers, who are widely in the focus of IS studies (Lipiäinen *et al.* 2014). The focus on SFWs will contribute to future research related to the usage of organizationally shared ICT, where the nature of the work is changing, partly even disruptively, and is impacted by multidisciplinary and social IS characterized by a diverse access to information and by a diverse user audience.

Because the majority of social IS research is centered on knowledge workers, and this research on SFW suggest taking a dedicated look at skill level, there is an interesting

research opportunity to replicate the study in a lower skilled white-collar environment. The propositions and usage profile can be used for future research on IS-induced change for case studies in different industries, and with different target groups such as lower skilled and more processing focused office-based jobs. Expanding the research in these different settings could lead to a validated and extend IS-induced organizational change framework. In particular, validating the skill level as an occupation over a spanning implementation factor for social communication IS would be an important future contribution. In addition, identifying other organizational change dimensions would help to extend the organizational change research and could lead to the identification of additional frames of reference that could help update the technological frames concept. The study also highlighted the need for new interface designs that fit those user groups that start their digital transformation journey out of the intra-organizational digital divide and the educational need of empowerment and technology use. Future research should focus on the outcomes and effects of the new digital freedom for those user groups and the potentially harming or overstraining effects on novice users.

4 Overall Discussion, Implications, Recommendations and Limitations

ESM is an emerging research stream that has an ever-growing number of studies and has seen a recent spike in interest generated by the necessities of the pandemic, which have demanded flexible ways of collaboration (Jia *et al.* 2021; Nugraha *et al.* 2021; Richter 2020). The presented research can contribute in several areas theoretically to the application of ESM and other social ICT types from an organizational perspective. To structure the current body of knowledge, a literature review based on the Webster and Watson (2002) principles was conducted from an organizational perspective. The developed moderation concept of Chapter 2.1 presents a literature-based appropriation to handle two of the most important success factors: UGC quality and encouragement to create UGC (Nolte et al. 2017; Nolte, Guhr, Breitner, et al. 2019). By successfully inducing impulses to ESM users to contribute high-quality content, the boundary spanning of the platforms can also be maintained in a mature phase of the implementation (Van Osch and Steinfield 2018). The need for digital knowledge sharing and visibility of communication have become even more pressing during the COVID-19 pandemic (*e.g.*, Richter (2020)), with employees suddenly being hidden behind a digital frontier, which confirmed the importance of the visibility properties of ESM (van Zoonen *et al.* 2021). The review of the literature also showed a lack of research in the privacy concerns field for internal organizational ESM application, which poses as one of the major usage barriers when an organization starts to actively interfere in the information flows of an ESM (Buettner 2015; Nolte *et al.* 2017; Wehner *et al.* 2017). Developing such a moderation concept from the literature requires an empirical validation (Nolte, Guhr, Breitner, et al. 2019). Therefore, a logical follow-up and a first step to a validation of the concept was to investigate the threat of privacy concerns to the practicability of the moderation concept. As the subsequent research confirmed, the generally accepted view that privacy concerns have a negative impact on the intention to use of IS indicates that ESM moderation could therefore harm the successful implementation of ESM (Malhotra *et al.* 2004). However, the conducted survey produced an interesting finding that the perceived risk and trust in the ESM platform were not significantly influencing the intention to use, which is contradicting to research in a non-organizational setting (Guhr *et al.*, 2021). Based on these findings, it can be assumed that risk of privacy concerns from organizational moderation is limited, if the organiza-

tion provides a governed, transparent, and trustworthy personal data treatment in general. Accounting for the need for work flexibility, BYOD is added to achieve a workplace of the future that consists of novel collaboration and hardware solutions. The conducted study highlighted that a private device managed by the employing organization is subject to significant privacy concerns by the employees and their work council representatives. The case studies showed that the work councils demand strict data protection, particularly in the sense of performance monitoring, to agree to a BYOD solution, which seems to be one of the key factors mitigating the perceived risk associated with BYOD. The subsequent survey evaluation showed that privacy concerns affect the usage intention of BYOD; however, the national culture evaluation of the study showed that the risks are of a different importance for each nation. Here again, the need for clear organizational guidelines becomes evident to provide a safe environment for the employee. As also noted in the literature, the national context is important when creating such organizational policies and might require national adaptations to provide the same effect in regard to privacy concern mitigation (Reay *et al.* 2013). The extensions of the model therefore addressed this challenge in general with a context dependent agility for moderation approaches. This situation awareness was added to provide organizations and research with a more holistic model to assess the fit of the moderation strategy. Thus, this research contributes to abandoning the one-size-fits-all approach when it comes to implementations of a social interaction platform in an organization, particularly in a large multinational organization that has complex cultural settings (*e.g.*, with diverse national, professional and organizational cultures) (Guhr et al. 2018; Nolte, Guhr, Breitner, et al. 2019; Van Osch and Steinfield 2018).

A limiting factor of the ESM moderation model is that it is built upon a literature review and should be applied in practice to validate whether the mechanisms and dynamics work as described (Nolte, Guhr, Breitner, et al. 2019). In addition, the gamification research field for the organizational context demands a separate scientific discussion as far as public social media assumptions and user behaviors are considered (Schöbel *et al.* 2019). Although the present study critically discusses gamification in the organizational context, it only provides a discussion starting point (Nolte, Guhr, Breitner, et al. 2019). Another limiting factor of the model is the identified monitoring perception that could trigger privacy concerns of the employees. The moderation model critically discusses this factor, and subsequently presented research directly evaluated the privacy

concerns in connection to ESM. However, as the main limitation of studies on the privacy concern, such concerns were evaluated independently for ESM and BYOD in different surveys. Having one research design and survey tool that includes ESM running on an organizational managed private device could hold some additional insights. The results from the ESM study indicating that the perceived risk and intention to use have a non-significant relationship, which contradicts prior research in closed non-organizational settings. Such differences identified in regard to privacy concerns can also affect the developed UGC moderation concept in a broader sense (Nolte et al. 2017; Nolte, Guhr, Breitner, et al. 2019). In particular, the national culture could have an impact on ESM moderation or use intention that was not considered in previous studies (Guhr *et al.* 2018; Oguz and Singh 2017; Schlagwein and Prasarnphanich 2011). It is considered that the proposed top management engagement of the favored guidance moderation approach could be leveraged, particularly in a high power distance culture, to gain acceptance for ESM (Ray 2014). The interrelation of the different cultural levels makes a generalization of the findings not free of limitations (Leidner and Kayworth 2006). As pointed out in the ESM evaluation, research is still rudimentary when it comes to the organizational trust that employees have in their organizations and its effect on IS and privacy concerns. This organizational trust should be evaluated in greater detail and discussed in the light of national data protection acts. This could produce crucial insights for the relevance of privacy concerns on a digital transformation at the internal organizational level (Guhr *et al.* 2022; Teebken 2021). The need for good qualitative information and moderation is also becoming more critical in the PSM field because PSM is starting to substitute for institutional news sources, and being confronted with the higher need for context depending on a higher central curation, the findings from ESM can also be applied to PSM to generate new insights (Sousa and Bates 2021).

Chapter 2 concluded that the perspective of knowledge workers is too limited and that the digital transformation is a complete organization-wide process (Guhr *et al.* 2018; Nolte, Guhr, and Breitner 2019). ESM presents an opportunity to expand and integrate digitally non-integrated areas of organizations so as to foster empowerment and knowledge sharing and take all parts of the organization into the digital transformation (Giermindl *et al.* 2017; Hannola *et al.* 2018; Nolte *et al.* 2020). This will also require organizations to educate workers in terms of digital competency, allowing workers to adapt to new work patterns and organizational affordances (Merchel *et al.* 2021). The

shop floor case study highlights the necessity for education on new technologies, which at first sounds similar to teaching IT skills; however, the case study showed it is related more to digital collaboration and communication competency of the employees. Although IT skills on how to operate a technology are difficult to learn, the softer competency of how to collaborate digitally is becoming a more important competitive advantage (Danneels 2006; Hannola *et al.* 2018). The continuing digital transformation and manufacturing automatization require organizations to teach their employees to cope better with IS-induced change. Such instruction should include a combination of IT skills and general digital and communicational competencies that allow employees to more effectively adopt new ways of collaboration (Merchel et al. 2021; Nolte et al. 2020; Nolte, Guhr, and Breitner 2019). Despite the importance of skills and competencies that have been identified by prior research and confirmed by the case study, the developed IS-induced change model helps in better understanding the digital transformation of an organization from different levels. The novel interrelation of the change dimension of the skill levels defined work practices (*e.g.*, Autor (2015); Kleindienst *et al.* (2016); Merchel *et al.* (2021)), IS enabled new work practices (Hsiao and Ormerod (1998), and a mindset as an important factors of a successful change (Bligh *et al.* (2018); Clegg and Walsh (2004). Although prior research has referred to the different factors involved in a successful change, no focus has been paid to the interrelation of each of the change dimensions. Thus, this research extends the theoretical conception of how to approach the change process with a multi-dimensional conceptualization. As one additional major finding, mindset plays a more prominent role than expected, which was confirmed by recent research on the change process in industry 4.0 conducted by Lee and Meng (2021). The limiting factor in utilizing a case study organization calls for future validation in different contexts. However, this method was considered the right approach to creating the initial research for the digital transformation of a shop floor and integration into the knowledge work context in an underrepresented research field (Bayo-Moriones *et al.* 2017; Benbasat *et al.* 1987).

Overall, the dissertation aimed to base the research in real-world problem scenarios and assure its relevance in both practice and theory, with a specific focus on digital collaboration and digital transformations. Organizational problem scenarios were used as a starting point for the academic investigation. With the chosen case study approach, the dissertation assured academic rigor and practical relevance with the application of scientific accepted methods of a literature review, survey tools, and semi-

structured interviews, and the application of scientific concepts such as a technological frames. The description of the case study, the first-source nature of interviews, and the access to viewpoints of organizational experts provide researchers with real practical viewpoints. This case study material provides unique insights that could only be obtained with the chosen approach, particularly considering the underrepresentation of the perspective of SFWs in terms of IS and the digital transformation research domain. The findings will help researchers better understand IS-induced change in practice and how ESM is viewed on the shop floor. In addition, changing the IS user-perspective to an organizational view helps generate scientific diversity and creates a counter perspective to researchers dominating the IS user perspective. Although several findings might be transferable to different organizations under a similar situation, the case study approach is limited in making a broad generalization. Future studies will need to consider that assumptions made in this study might not be totally applicable to every organization that pursues digital employee empowerment or applies an IS other than ESM. Therefore, the recommendation is to expand this research to other areas similar to a shop floor such as construction or warehousing. It should be evaluated whether the ESM is also perceived here as a valid option for digital integration and empowerment. In addition, it should be evaluated whether white collar jobs with lower skilled job profiles (*e.g.*, office clerks and accounts payable accountants), have similar technological frames as SFWs owing to their task profile similarities (*e.g.*, repetitive and manual tasks) (Guhr *et al.* 2018; Nolte *et al.* 2020). Furthermore, the application of an IS-induced change model in different industries or even contexts could help strengthen the generalization of this model (Nolte *et al.* 2020), which would be beneficial for theory and practice and also allow for further extending the model into an IS-induced change theory.

Novel practical implications were also derived from the presented research studies by addressing ESM not from the user's perspective but from the organizational perspective. Instead of providing pure user insights, which demand practitioners to synthesize their concepts, the studies provided a direct translation into actionable ideas. First and foremost, the moderation concept provides organizational managers with a categorization and operationalization of moderation approaches and methods on how to motivate employees to actively participate in ESM and encourage them to produce high-quality UGC. Prior research from Rode (2016) described the knowledge-sharing motivation of users of ESM, which can add a tool-set of existing operational ESM metrics

or approaches that would not only motivate but also account for the quality of the ESM content. Second, the discussions on practical ESM scenarios will provide practitioners with clear guidance that ESM is context dependent when it comes to organizational interference. The key message is that a one-approach-fits-all maturity stages or usages scenario should be avoided. ESM is a social technology that evolves with the ESM usage and users, and thus needs continuous evolving of organizational governance to create a long-term oriented, safe, and credible space for organizational knowledge sharing and collaboration. One additional practical user insight could be derived from the privacy discussion of this dissertation. The general organizational context seems to influence the perceived risks of users, highlighting how important employee perception of organizational data protection and privacy policies are. This new perspective on privacy concerns considering the organizational context provides a new perspective and helps to interpret common privacy concerns associated with ESM and BYOD solutions and how to counteract work councils and employee concerns (Buettner (2015); Seguel (2021); Lebek *et al.* (2013)). The second part of this dissertation provides practitioners with unique insights from a practical case evaluation. The insights offer practitioners a first ESM profile for a non-digital integrated professional group and how to structurally empower them. The application of technological frames for the case study shows practitioners the importance of an elaborated IS education to align the technological frames prior to an implementation attempt. In the sense of ESM, the study also provides use cases for a shop floor or similar manual labor-oriented profession. The main contribution from the practical side is the first operationalization of IS-induced change for employee empowerment. Providing a holistic view on the digital transformation of an organization will give practitioners a framework to assess their digital transformation efforts. The interrelation of a mindset change, work practice change, and IS-change shows that digital change is not a singular event that is finished with IS access. On their journey toward the digital empowerment of their employees, organizations will need to successfully align all change dimension

Table 19 Overview of contribution and recommendations

Research Question	Key Finding & Contribution	Recommendations
RQ1: How can organizations moderate the social exchanges in ESM and influence the UGC quality?	• ESM moderation is needed to achieve high UGC quality and encouragement at the same time • Typology of different moderation approaches • Context depending moderation approach selection	• Validation of moderation approach and quality measures perception by users • Create an understanding of Gamification in the organizational context
RQ2: How do employees' concerns for information privacy influence the behavioral intention to use Enterprise Social Networks?	• Privacy concerns have an impact on the intention to use ESM • Organizational context is diminishing the relationship between the perceived risk and benefit and the intention to use	• Explore organizational trusts effect on privacy concerns perception by employees • Investigate the impact of organizational data protection acts on privacy concerns
RQ3: How do companies deal with employees' privacy concerns regarding the introduction of BYOD and what is the impact of employees' privacy calculus of risks and benefits associated with the intention to use of BYOD mobile devices?	• Work councils perceive BYOD as a privacy threat and request organizational privacy acts • Privacy concerns have an impact on the intention to use BYOD • National culture influences the importance of privacy concerns impact on perceived risk and benefits	• Combine BYOD and ESM as complementary technologies for a complete "new work styles" privacy concern survey • Investigate organizational privacy policy setting in multinational corporations for national culture recognition
RQ4: How is professional diversity influencing the ESM intention to use of employees?	• Professional diversity influences the perceived usefulness • Connecting Job characteristic, occupational culture & personality traits to an ESM fit matrix	• A dedicated empirical investigation of multi-occupational group organizations and ESM fit • Establish a deeper understanding of organizational cultures' mediating effect on TAM
RQ5: How do shop floor workers perceive their ICT integration and how can they utilize ESM?	• Lower to medium skilled SFW feel not well integrated • Differentiated shop floor use cases are presented by empowerment potential, skill level and interaction mode • SFWs have a desire to be digitally integrated	• Application of described ESM use cases and derived interface designs at the shop floor • Expand research to different organizations in other industries like construction • Compare the technological frames of SFWs and office workers with similar repetitive jobs • Validate employee's skill level as an occupation over spanning implementation factor for IS • Extend the technological frames by centering the sensemaking on the IS-change rather than only on the technology perception • Effect of digital freedom and inclusion on the SFWs from a technostress perspective
RQ6: How ESM empowerment results in organizational challenges at the shop floor level and how can the shop-floor workers task profile influence the ESM integration?	• Identification of three significant organizational challenges for ESM integration of SFWs • Development of skill differentiated ESM shop floor profile and implementation strategy	
RQ7: What is the role of organizational practices and organizational mindset in the context of IS-induced change aiming to empower shop floor workers?	• Combining SFWs and organizational perspective on IS-induced change • Conceptualization of IS-induced change as multi-dimensional and longitudinal change journey/process	

5 Overall Conclusions

The successful digital transformation of internal collaboration, communication, and the knowledge sharing process results in IS-induced change, which challenges the organization on several levels (Dittes and Smolnik 2019; Fischer *et al.* 2020; Kraus *et al.* 2021). Transforming these internal processes can create a competitive edge for an organization because it will not experience collaboration or innovation rate reductions through a digital barrier, particularly under a situation such as an enforced work-at-home period (Archer-Brown and Kietzmann 2018; Kane 2015). To transform knowledge sharing and communication channels, ICT in the form of ESM has proven to be beneficial. ESM covers a variety of features that have a core for creating visible knowledge and an information flow and therefore structurally empower the organizational user (Dittes and Smolnik 2019; Johns and Gratton 2013; Kügler *et al.* 2015; McAfee 2019, 2006; Richter *et al.* 2020). ESM is therefore a novel technology that poses as an interesting research subject from the perspective of organizational change.

This dissertation in accordance with the research question was divided into two chapters. The first part looked at ESM in an intra-organizational context from an organizational perspective. First, an extensive literature review was conducted to answer the need for organizational moderation of ESM and identify moderation approaches (Nolte *et al.* 2017). Based on the initial moderation concept, the literature review was extended to answer the question on how an organization can also encourage high-quality UGC (Nolte, Guhr, Breitner, et al. 2019). The importance of the use scenario context was synthesized as an integral success factor for organizational moderation approaches (Nolte et al. 2017; Nolte, Guhr, Breitner, et al. 2019). Based on the moderation model, an organization will be able to stimulate the context depending on the two most crucial ESM success factors: encouragement of user contributions and content quality. During the conceptualization of the model from an organizational perspective, doubts regarding the compatibility of the organizational interference and the user's privacy became evident. This critique of potential privacy concerns resulting from organizational moderation was addressed with two user-driven survey investigations regarding privacy concerns and a novel collaboration and communication solution (ESM and BYOD). The first particular ESM-based survey confirmed that privacy concerns generally harm the usage intention, although for ESM in an organizational environment, the

privacy calculus of the perceived risk did not significantly influence the relationship (Guhr *et al.* 2022). The second study was focused on BYOD, which often accompanies new collaboration technologies. The investigation also confirmed the negative influence of the general privacy concerns on the intention to use and additionally delivered insights into national cultural influences on the perceived risk variable (Degirmenci *et al.* 2019). The studies highlight the fact that privacy concerns in an organizational context take a special role that can be influenced by organizational and national cultures. Consequently, privacy concerns remain relevant for ESM; however, owing to national culture and the overall trust that employees have in the data protection of their employer, the effect is not as significant. Thus, the developed moderation framework will remain valid if the organization has proper data protection and policies implemented for employee reassurance of safe knowledge sharing and a collaboration environment.

The first part of the dissertation was based on literature focusing on the knowledge worker; however, a digital transformation redefines current non-digital professions by adding more knowledge work components, and the need to operate IS and collaborate digitally throughout the organization (Dery *et al.* 2017; Lee and Meng 2021; Richter *et al.* 2020; Vial 2019). ESM is beneficial when organizations seek to digitalize processes and knowledge, and therefore the second part of the dissertation started with a literature review of how professional diversity is affecting the acceptance (Guhr *et al.* 2018) of ESM technology. The investigation produced a generalist framework for job characteristics, occupational culture, and personality traits for ESM applications and proposed a future research need for technology acceptance and professional diversity. In addition, the underrepresentation of SFWs as a research focus group were identified, despite the fact that such workers are at the center of IS-induced changes with Industry 4.0 and process automation (Campatelli *et al.* 2016; Giermindl *et al.* 2017; Guhr *et al.* 2018). Therefore, a longitudinal case study research design was chosen to create initial insights on the digital integration and empowerment of SFWs. The case study subject was an international automotive supplier which at the time of the research project was trying to integrate SFWs into their knowledge worker-based ESM platform. Through 24 semi-structured interviews with SFWs, an as-is situation of digital integration was first assessed. The SFWs indicated that their integration is extremely limited to non-existent for lower to medium skilled workers and that higher skilled workers owing to their scope of work are already more integrated (Nolte, Guhr, and Breitner 2019). Despite the perceived digital divide, the study developed active and passive

ESM interaction use cases for a shop floor environment and with it a legitimization of efforts conducted by the organization to integrate its SFWs. Digital integration and with it the accompanied digital empowerment of SFWs is not free of challenges for an organization. “Supporting organizational conditions for ESM use,” “work-centric shop floor user interface designs,” and “empowerment and ESM education needs” were identified as the three main organizational challenges for empowering SFWs through an ICT such as ESM (Nolte, Guhr, and Breitner 2019). Concluding the SFW perspective assessment, the dissertation produced an ESM shop floor usage profile and provided five novel ESM integration propositions. After the operational and theoretical evaluation and discussion of ESM on the shop floor, it became evident that IS-induced change is an area requiring future research (Nolte *et al.* 2020). Therefore, the case study was extended through a discussion with an organizational expert to conceptualize IS-induced change targeted at employee empowerment. By applying the technological frame concept, a digital enabled change was captured, and was conceptualized as a multi-dimensional and longitudinal IS-induced change process. Triggering events, internal as well external, can start a change process in either of the three dimensions: work-practice change, IS change, and mindset change. An important notion of the study was that IS access alone will not create the change toward digital empowerment. Based on the readiness of the employee group and the organizational environment, the change will need to surpass each dimension to create the intended IS-induced change. As a highlight of the study, IS change can take over the role of a conflict catalyst pointing to deficiencies in the other dimensions through implementation difficulties.

This dissertation contributes to both theory and practice in the fields of ESM, digital SFW integration, and empowerment, as well as IS-induced change in the context of an internal organizational digital transformation. Academic rigor is ensured through the founding of the presented research with systematic literature reviews and then using different research methodologies that are widely accepted in IS research. Relevance of the research is assured by basing the research frame on practical problem scenarios. Through the course of this dissertation, focus group interviews, expert discussions, and an established organizational relationship warranted a continuous interchange between research and practice. The dissertation also provides a comprehensive overview of ESM moderation approaches. In addition to general approaches that represent the current state of research in the field of ESM, insights into privacy concerns and

ESM as well as BYOD in an organizational context were provided. Furthermore, this dissertation provided a unique case study on the state of digital integration of SFWs and used the context of internal digital transformation to provide a novel IS-induced change conceptualization. The presented research will contribute to a better understanding of ESM and IS-induced change from an organizational perspective for both theory and practice. The dissertation provides several starting points for future research in the area of ESM moderation, privacy concerns in an organizational context, and for the IS-induced empowerment and internal digital transformation of a shop floor.

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Appendices

Appendix A1

Title:	**Moderation of Enterprise Social Networks – A Literature Review from a Corporate Perspective**
Authors:	Nolte, Ferry; Guhr, Nadine; Breitner, Michael H.
Published in:	Proceedings of the 50th Hawaii International Conference on System Sciences (HICSS)
DOI	https://doi.org/10.24251/hicss.2017.238

Abstract from Source Article:

The implementation of internal social collaboration technologies confronts corporations with new challenges. Former unidirectional information flows become multidirectional and user-content driven networks. Prior research describes the successful implementation as a challenging management task with employees' usage at the center of attention. Consequently, corporations need to select a moderation style to encourage the usage. The degree of corporate engagement might have repercussions on the contribution behavior. We conduct a structured literature review to identify pre-existing IS contributions to the moderation phenomenon in social media tools, which help to explain on how to moderate these communication platforms in the enterprise context. We reviewed over 150 articles on the subject and assessed 31 articles in depth on the degree of corporate engagement and user content encouragement. We analyze the identified literature for gaps in understanding the phenomenon and provide a first assessment of three different moderation approaches and give implication for future research.

Proceedings of the 50th Hawaii International Conference on System Sciences | 2017

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Abstract

The implementation of internal social collaboration technologies confronts corporations with new challenges. Former unidirectional information flows become multidirectional and user-content driven networks. Prior research describes the successful implementation as a challenging management task with employees' usage at the center of attention. Consequently, corporations need to select a moderation style to encourage the usage. The degree of corporate engagement might have repercussions on the contribution behavior. We conduct a structured literature review to identify pre-existing IS contributions to the moderation phenomenon in social media tools, which help to explain on how to moderate these communication platforms in the enterprise context. We reviewed over 150 articles on the subject and assessed 31 articles in depth on the degree of corporate engagement and user content encouragement. We analyze the identified literature for gaps in understanding the phenomenon and provide a first assessment of three different moderation approaches and give implication for future research.

1. Introduction

Enterprise social networks (ESN) is still a young field within the information systems (IS) research. The dynamic nature of this research field calls for a shifting focus to address the plethora issues, both from the perspective of research as well as from practice. Organizations nowadays are heavily investing into ESN services to facilitate a better exchange, wider reach and easier access to organizational information [3,39,45]. As a consequence of such high organizational attention, this young and evolving IS research field is recognized as an important part of the whole social media research stream [35]. Those web based social media technologies – micro-/blogs, social networking sites, wikis, communities to name a few [17,36,67] – are common in user features of profiles, relational connections and sharing/exploring [8]. ESN services can be separated in intra-organizational platforms restricted to an employee's audience or in the use of social media platforms for external party interaction [59]. The first named intra-organizational context challenges enterprise settings fundamentally. Via ESN services intra-organizational knowledge and information flows become visible throughout the whole corporation to enable employee driven communication, collaboration, innovation and knowledge sharing [22,43]. The visibility of information and relation ties is achieved with the open display of user generated content (UGC) within the ESN [45]. Here the UGC plays a vital role for organizations, as the open content display can be beneficial for enterprises to bridge structural holes in terms of employee innovation [22] or diminishes the unwanted information brokerage of specific individuals' in the organization [60]. Further, the visibility lets employees explore UGC actively by editing and distributing or passively through consuming content [41,67]. This transparent bottom up or crowd approach might interfere or even contrast with current organizational structures and work practices [37].

The current body of knowledge (BoK) in regard to the intra-organizational deployment of ESN is driven by the discussion of the support or substitution of internal communication, collaboration and knowledge sharing practices [31,45,67]. Here the effect on employee performance of ESN use [1,28,41] and factors influencing employees motivation to engage or reject such platforms [10,12,13,42,52,62,69] are growing fields. Since, these new collaborations tools are impacting the organizational relation und information association, they also interfere with hierarchy and power structures [6,67]. This very interesting research topic has not been getting the main interest, although, it was being mentioned and acknowledged by the ESN researchers. As prior research was mainly focused on the user perspective, we try to pick up this discussion from a corporate perspective with the following question:

URI: http://hdl.handle.net/10125/41392
ISBN: 978-0-9981331-0-2

RQ: How can organizations moderate the social exchanges in ESN and is a corporate moderation necessary?

The paper is structured as follows: In the first section the research design and methodology are described. After presenting the analysis procedure, we report the results. We highlight with this systematic literature review what prior research gave for implications on how those platforms can be moderated. The identified moderation concepts and implications are categorized by the degree of corporate engagement. Following the discussion, if such interference by a guiding corporate hand is influencing the UGC creation and if it is really necessary when considering the user-centric ESN design, we give implications for research and practice. We conclude by pointing out limitations and giving an outlook for future research.

2. Methodology

Consistent with [71], we performed a rigorous and structured literature review of publications to identifying, analyzing, and conceptualizing relevant research literature pertaining to ESN moderation. The rationale to use a literature review method is to structure the current BoK in order to highlight what prior research has already uncovered and to conceptualize new opportunities for extending the evolving ESN research field. According to [20] we outlined a four phase process for this research paper: (1) problem formulation and database collection, (2) initial screening, (3) clustering and (4) in-depth evaluation, analysis and presentation of the data to synthesize and extend the current BoK. In doing so, we were able to take advantage of the suggestions and possible pitfalls associated with each step of this literature review [40]. The initial phase (1) contains the examination of authoritative sources to determine a problem specification and formulation taking the proposed focus and scope into account [18]. For creating an appropriate pool of research papers, [71] argue that researchers should employ a high quality selection of papers. Due to the very young research field, we did expand our literature database, from mainly top ranked IS publication [49,56] to other journals and conferences that are not highly rated. This decision was made to include innovative ideas, often presented in conferences, which are building the starting point for discussions [65] or in lower ranked journals [48]. The conferences included the latest social media track proceedings at ICIS, as the leading high quality conference in IS research [11], ECIS, to provide the newest exchanges of the European researches community and HICSS, to account for the Anglo-American counterpart of the ongoing ESN discussions. To ensure reliability which refers to the replicability of the search process [9], the literature search process was documented comprehensively. Validity is based on the selected databases, covered period, keywords used and the application of a forward and backward search [9]. To fulfill the requirement for validity, we searched through different databases: AISeL (136 hits), ScienceDirect (67 hits), IEEEXplore (47 hits), JSTOR (3 hits), SpringerLink (23 hits), ACM (21), Wiley (101 hits), Emerald (26 hits) and InformsOnline (194 hits). From there a forward and backward search was conducted. Both were performed manually. To account for different abstraction levels occurring in literature, we used different search terms (e.g. “enterprise social media”, “enterprise social network”, “enterprise social software”, and “enterprise social networking”). To select relevant publications in the considered research field, inclusion and exclusion criteria were defined. First, only literature in English language and with a strong focus on ESN was considered. Second, non-academic publications (such as white papers) and those that did not specifically deal with ESN (e.g. public use) were excluded. As the research field is quite young [35] no past time interval restriction was applied and the upper limit was set for the latest HICSS’16 proceedings. Upon completion of the research process, the period was ten years (from 2006 to 2016). In Phase 2, the databases were searched to determine whether a publication contained at least one of the search terms in the title, abstract or keywords. In total, 618 publications were identified. If the field of search (i.e. title, abstract or keywords) could not be specified in the search query, a full-text search was conducted. We therefore downloaded and checked these papers for relevance again. In most cases, papers that we omitted either did not yield any insights with respect to our research object or used the keyword in a different manner. After application of the before mentioned exclusion criteria, the final number of 157 papers results. In Phase 3, we tagged each paper with keywords indicating its major topic. Afterwards, these papers were clustered by topics. This led to the final typology (see Table 1) of 16 topics related to ESN moderation cluster. The major topics they addressed were, e.g. “power”, “top-management commitment”, “governance”, “feedback” and “corporate communication”. All of them were then consolidated to the “moderation” category and are subject to an in-depth analysis. The topics assigned are all related to the corporate interference. E.g. the topics “power” addressed content flow barriers related with corporate hierarchies. Whereas “content overflow” topics relate to content prioritization difficulties faced by corporations in promoting the usefulness of such tools.

These diverse topics will provide distinct angles of issues met by companies in regard to ESN moderation.

Table 1 - Moderation topic cluster

Code	Topic	Cluster
A	Empowerment	Moderation
B	Power	Moderation
C	Policies	Moderation
D	Corporate communication / business objective	Moderation
E	Content quality	Moderation
F	Content overflow	Moderation
G	Corporate knowledge diffusion	Moderation
H	Knowledge protection / ownership	Moderation
I	Control	Moderation
J	Hierarchy	Moderation
K	Governance	Moderation
L	Media synchronity / ambidexterity	Moderation
M	Leadership / top-management commitment	Moderation
N	Participation	Moderation
O	Moderation	Moderation
P	Feedback / employee voice	Moderation

Table 2 - Overview of literature clustering

	Moderation topic cluster														
Article	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
[2]			x	x					x							
[4]	x		x											x		
[5]		x							x	x	x	x			x	x
[7]							x					x				
[12]			x								x					
[13]			x								x		x			x
[14]			x								x		x			
[15]		x									x					
[17]	x	x							x	x				x	x	x
[19]		x							x	x	x					
[21]		x							x	x			x			
[23]							x					x				
[26]		x							x	x			x	x		
[28]				x										x		x
[31]	x	x			x	x					x	x	x	x	x	x
[32]					x	x								x	x	
[33]			x								x				x	
[34]			x				x						x			
[38]		x	x						x	x			x			
[39]								x			x			x		
[45]								x						x		x
[50]		x							x	x						
[53]											x			x	x	x
[54]																
[55]									x	x	x			x		
[57]							x							x		
[62]											x				x	
[63]				x												
[64]	x	x							x	x			x			
[68]											x			x	x	
[70]													x		x	

The final phase 4 include activities such as connecting, comparing and explaining [46]. We analyzed both the initially identified papers and the papers derived from the additional clustering process. Amounting up to 53 articles were than reviewed in depth, on their implications from a corporate perspective, which led to further eliminations from the publication base. In the end 31 articles are considered to be relevant for the discussion of the research question. Table 2 shows the final overview of the articles and their topic distribution within the derived moderation cluster, highlighting the diverse topics addressed within the articles.

3. Research and findings

The loss of control over the information flow or shift in power relation is concerning several researches in their discussion parts [5,6,17,19,51,66]. One could think that enterprises will be very cautious with implementing those tools but "executives and managers attempt to leverage the power of the informal information economies of their companies" [38, p. 747.]. Thus, the question on how to encourage this informal information networks to produce UGC is challenging. Considering on the one hand the loss of control and on the other hand the need for UGC is a contradicting goal conflict [5]. Since, the ESN is in an organizational setting the use might be mandatorily, promoted or voluntarily organized for employees [19]. This leads ultimately to a scenario in which the enterprise either controls and supervises the ESN content flow or leaves the organization to the employee crowd. Based on this diametric understanding a broad area in-between leaves room for further interpretation.

Table 3 - Overview of article grouping

Article	Corporate supervision	Corporate guidance	Employee self-organizati
[2]	x		
[4]			x
[5]	(x)	x	
[7]			
[12]	(x)	x	
[13]		x	
[14]		x	
[15]			x
[17]		x	
[19]		x	
[21]		x	
[23]		x	
[26]		x	
[28]		x	
[31]	(x)	x	(x)
[32]	x		
[33]		x	
[34]		x	
[38]		x	
[39]			x
[45]			(x)
[50]	x		
[53]		x	
[54]		(x)	
[55]		(x)	(x)
[57]		(x)	(x)
[62]		x	
[63]		(x)	(x)
[64]		(x)	(x)
[68]	x		
[70]		x	
(x) not soley in favor	3	5	6
x in favor	4	17	3

Table 3 gives a brief overview about the arrangement of the reviewed literature. We will first highlight and explain the two contrasting understandings (corporate supervision with the focus on control and employee self-organization with a focus on freedom) and then elaborate on a comprising perspective (corporate guidance with the focus on a balanced moderation). The selected studies might not only be the domain of one approach with the complete exclusion the other approaches (shown with a "(x)" in Table 3). This means, that the authors were very differentiated in their implications. Although, often

the narrative put one approach in the foreground, we could still gain useful insights about another approach. Consequently, one article might be assigned to two approaches and if one approach is clearly favored "x" is used as an indicator.

3.1 Corporate supervision

To start with the corporate supervision category as displayed in Table 1 four articles ([2,32,50,68]) were giving implications for an active and strong corporate engagement to facilitate the use. Three more articles ([5,14,31]) were partly addressing a rigorous corporate moderation. The necessity to make the new communication environment known, safe and setting the expectation of use for the employees is one of the main reasons for a high degree of corporate engagement [2,50,68]. The literature based study of [68] applied the fit-viability model for accessing concerns for the public SNS and ESN use, suggesting for risk mitigation issues "corporations should establish a governance structure and policies for anticipated uses" [68; p. 215]. Further, they advocate being vocal about consequences of non-compliance. Strict display of e.g. use cases to diminish associated barriers of an unknown application scope, is also addressed in the case study of [2]. In accordance with the mentioned policy suggestion the authors formulate access control as well as monitoring and filtering recommendation. Through the latter two mechanisms the policies become enforceable and the employee usage can be analyzed. [32] argue in their research paper that functional corporate tracking and display of UGC contributors activity can "incentivize people to engage in this practice" [32; p. 13]. They even propose to use such user contribution and reputation metrics for annual employee performance reviews. This implies that employees' careers might depend on their ESN contribution profile, which bears a huge amount of organizational pressure. This need for organizational pressure is also recognized in the case study of [50] for accepting the ESN services as an "required tool at the workplace"[50; p. 11]. But their case study also reveals the need for corporate moderated UGC quality controls and access management. This relates to the access control thought of [68]. They suggest that with the help of access rights corporate authorities are not only able to predefine the nature of content but also the reach and size of audience for UGC [68]. This on the one hand is reducing the openness constraint for contributors but on the other hand demands new corporate roles like ESN managers (e.g. community or wiki manager) and supervision committees as well as top management usage display [2,5,14,31,50,68]. The high degree of corporate engagement is envisioned to build an organizational 'support structure' to empower and motivate UGC providers [2]. Here [68] raise the concern that some users might not be happy with direct interference, but opting the ESN UGC quality level over the single user`s freedom.

Summing up (see Table 4), the active supervision is encouraging the ESN users to actively contribute because the accessibility is predicable, the use is promoted or incentivized and employees are informed about the expected use as well as the content reviews to assure quality.

Table 4 – Summary of supervision approach

Corporate supervision	
Org. support structure	[2,5,14,31,68]
Policy/User compliance	[2,68]
Access control	[50,68]
Monitoring/Filtering	[2,32,68]
Organizational pressure	[2,32,50,68]
Content quality control	[2,32,50,68]

3.2 Employee self-organization

The second approach is motivated by the bottom-up ideology of the web 2.0 roots [64] and advocates a loose moderation to comply with the user-centric ESN nature [4,15,31,39,45,57,63,64]. Table 1 at the beginning of the paragraph highlights that only three articles ([4,15,39]) of the sample were in clear favor of such an employee self-organization. However, six further articles ([31,45,55,57,63,64]) are positively discussing it with the respect to other approaches. In the literature based review of web 2.0 technologies in organizations [64] conclude that prior "highly standardised information infrastructures tightly administered by top management" [64; p. 6] stay contrasting to the new technology, especially naming the intranet as an artifact. The author reflects also on top managers' engagement but describes them as promoting key users and UGC contributors themselves, rather than UGC supervising and controlling gate keepers. Bearing in mind the power relation context, this is putting the executives on eye level with other UGC creators in the ESN [55,64]. In terms of knowledge management [39] pick up the dissimilarity with traditional centralized structures. The author reasons that the UGC is the accountability of the employee who created it and leaves only the option to let it be "governed by the employees themselves, including the choice of whom they want to distribute the self-generated content" [39; p. 162] to. However, in that literature based research agenda they acknowledge that management might need new responses to deal with unpleasant UGC. Joining in,

[15] reflected on their mixed method case study regarding wiki use for research and development project management, that the content creator should be in charge of the reach, to increase the interaction of UGC contributors. Although that the authors of [12] remark, that the activity meta data (e.g. user A comment on user B's blog) can and should be distributed openly to give a sense of progress. This shows that the accountability of UGC lies with the creator and so does the right of administration of the sharing process. [4] identified in their study about benefits and barriers of ESN in large scale organizations, that a strong corporate engagement e.g. through policing the use, might result in dismissal by the content creators. The perceived "restrictions to freedom of expression" [4; p. 83] by users is strongly related to the willingness to contribute. Hence the high degree of user freedom und low corporate engagement is seen as a positive factor on UGC creation. Although [4] reflect that the degree of freedom is not always a choice of the company due to industry regulations and public law demands. Being more differentiated on the policy part [63] suggest that the new technology enabled collaboration is governed "on principles rather than rules" [51, p. 251.] which is in accordance with the widely mentioned permissive corporate culture [4,15,31,57,64]. In their focus group research with senior IT managers, they further bring up a user self-policing mechanism through the elimination of anonymity. Which means that in a professional context the vandalism [15] or extra negativity related to UGC will be governed by ESN users themselves, if those sources are also transparent and are held accountable for such doing. They do not name that mechanism directly but it relates to the later made connection of [5] and [31] to the stewardship concept. Here both suggest as evidence from their case studies that with the growing participation and active contribution of UGC the users become stewards of the ESN without a clear corporate demand and taking over new responsibility roles by themselves. By taking over a more collective understanding of the ESN benefit, the users might voluntary execute bottom-up control functions (e.g. like wiki-gardeners [31]) and consequently follow a more intrinsic pro organizational behavior.

Table 5 - Summary of self-organization

Employee self-organization	
Equality	[55,64]
Accountability	[15,31,39,63]
User freedom	[4,15,63,64]
Corporate culture	[4,15,31,57,64]
Transparency	[4,15,63]
Stewardship	[31,63]

3.3 Corporate guidance

As the latter two approaches were quite diametric the third approach is in the middle combining both sides with a moderate corporate engagement. This approach is identified in seventeen articles (see Table 1) of the sample with five more articles not clearly advocating solely for the approach. In this moderation style the focus is on leveraging the decentralized bottom-up roots with a corporate guidance to facilitate the willingness to contribute UGC in the ESN. This tradeoff between the other approaches is underlying the ESN discussion early on and is mentioned by [23] in an examination of the enterprise knowledge management perspective and the representation of knowledge within the new web 2.0 technologies. Further [23] concluded that organizations need a plan and that the context of the use plays a role in whether a top-down or bottom-up moderation is applicable. This relates to the communicational ambidexterity mentioned first by [5] and then further elaborated in detail by [31]. In the case study of [31], the authors examined the interplay between internal organizational published content and UGC management. They evaluated the different modes of communication and applied the concept of ambidexterity to explain how these two modes can be managed side by side with the growing multi-vocal UGC from ESN usage. The resulting framework suggests enabling mechanisms - consisting of flexible governance, a set-up of communication environment and a dynamic communication culture - will nurture the communicational ambidexterity capability of corporations. This will result in a complimentary outcome of the two modes and will reflect back on the enabling mechanisms. Although [31] focus on the interplay of two different forms of internal communication they show a context depending corporate guiding hand. What can be derived from their case study is, that corporations need to be aware that their engagement is not "overpowering UGC communication" [31; p. 60]. Context is also seen as an important guideline for using a certain tool for a specific task [7]. [34] give some additional implication. They described the need for "careful" policing in combination with ESN user education in order to foster persistent UGC. This policing and guideline theme is visible in other articles [17,28,33,38,53,63,64,70] but is different from the corporate supervision perspective with the education theme being in the focus, rather than the compliance character. This user education is primary associated with a corporate engagement in communicating, training and show casing the wanted ESN use, with top-management taking the active ESN user role

model in [13,26,28,34,70]. Top-management commitment to ESN tools is often seen as a jump starter at the beginning [38], quality assurance [12,14,21] and motivator [14,21] for UGC. Another corporate moderation is suggested by [54] in their mixed method case study examination to determine diversity among different ESN communities. They promote the idea of a templating service which guides the ESN user to the wanted UGC outcome via a corporate service orientation, but preserves enough flexibility to customize the user's own perception. The flexibility is again highlighting the before mentioned tradeoff. Here [28; p. 4075] deliver additional remark with their mixed method case study that the degree of predefined uses (here understood as the degree of corporate engagement) needs to leave "still enough freedom" for the ESN users in order to have them engaged. Further, implications are given in terms of recommendation systems to steer the users` content consumption [54,62] or with a reward system and ESN management team [12,70]. The latter two were also part of the findings in the corporate supervision approach, but here the focus was on the UGC promotion [12,14] rather than on compliance. Underlying most of the articles in this section, organizational culture [5,12,13,14,17,31,57] is one of the facilitators of this moderate engagement approach, with an open and supportive culture encouraging UGC creation. Yet again the stewardship idea is visible, with corporate culture, principles and user education building the common ground for the UGC community to start an efficient self-regulation process [13,31].

This said the guidance approach is touching in some means the other presented moderation approaches. But with the difference that the governance mechanisms are suggesting to have an adjustable structure, the architecture of the ESN tools is defined but open to context depending customization, a service orientation in ESN management and a voluntary user education. This will lead to principle based moderation which gives the UGC provider enough free space and adequate support structure to encourage the content creation willingness.

Table 6 - Summary of guidance approach

Corporate guidance	
Dynamic governance	[17,28,31,33,34,38,53,55,63,64,70]
Context	[7,23,31,57]
User education	[17,28,33,38,53,63,64,70]
Top-management commitment	[12,13,14,21,26,28,34,70]
Service orientation	[28,54]
Stewardship	[13,31]
Corporate culture	[5,12,13,14,17,31,57]

4. Discussion, implications and recommendations

With the classification of methods and concepts under each of the three generic approaches, it became evident that all sources advocate that they will lead to a high degree in UGC content. If so, it would be irrelevant for corporations to choose a moderation form. We, however, will now review the findings above with the help of some critical success factors for ESN adoption and web 2.0 phenomena. The outcome will be a classification of the three approaches in terms of the encouragement of UGC and the prior described degree of corporate engagement. We start the discussion with addressing the critical mass encouragement which is believed to deliver the self-sustaining factor for an ESN next to other computer mediated communication and collaboration mediums [12,17,27,29,34]. The main argument for the supervision approach is the generation of a clearly structured and reviewed environment. A revision or even surveillance strongly influences the privacy of an ESN user. Here recent studies revealed that privacy concerns have a negative impact on the intention to use and sharing behaviors of ESN users [10,52]. Further, the reduced freedom for users to generate content is contradicting with e.g. corporate blog reader attraction, who are seeking greater UGC diversity [62]. On the other hand, incentivizing UGC, as proposed by some authors, might be helping to offset the negative impact of privacy concerns and restricted freedom. But this can be a complex task in terms of threshold setting and quality assurance when considering current results of [47] for public SNS. The discussion showed, that a strong corporate engagement has an ambivalent status, but on the apprehension of the ESN being perceived as a top-down corporate communication channel (e.g. [17]) we propose that the corporate supervision approach will lead to a relatively low degree of UGC.

The self-regulation approach is taking the freedom and variety argument for its sakes and proclaims to generate a high level of UGC. However, when looking at this approach a mandatory pre-condition is an completely open communication culture without hierarchy constraints [5,17]. Otherwise the content generation might be harmed because of its professional environment, where the UGC creators' reputation is at stake and is conflicting with a non-guided trial and error use approach [23]. Also relating to this the accountability and audience structure empowerment is identified to create "a sense of anxiety" [66; p. 18] for ESN users. The content creator needs to think about with whom he wants to share and might be confronted with leaving people outside of the

information loop. The proclaimed freedom bears a lot more user responsibility through active partaking in power relation setting. E.g. the feeling of 'anxiety' can further escalate when the question of distribution was prior placed with the employees' supervisor, or the latter needs to intervene if a discussion takes a wrong way due to missing cues [58]. Another UGC distribution barrier can originate from professional users more self-oriented and calculated profile in their contributing and sharing behavior [52]. Moreover, the self-orientation might make it difficult to build the proclaimed common basis which eventually leads to the stewardship phenomenon. Hence, without setting common and accepted principles, this state might not be achieved. This deems the public use inspired bottom-up moderation as not sufficient enough to guarantee a high UGC share. Considering the investments corporations made for such software applications it seems risky to just let them develop their way next to other traditional and largely accepted communication and collaboration technologies (like e.g. email). Comparing the self-organization approach, it is rather encouraging UGC than the supervision style, in the right organizational setting.

Moving on to the third approach it is clear that the moderate positioning bears a huge advantage. The option to combine the wanted benefits and diminish the undesired accompanying effects of both other approaches sounds desirable. This approach can be used to nurture the preferred organizational setting and to embrace an open communication culture through educating and guiding the UGC provider. This educated user will, on the one hand, have the described safe and known environment and on the other hand will find enough space but also support/service to express themselves. Nevertheless, this approach is a difficult task for the organization, as they have to provide service without giving the impression of branding the employee identity, which brings us also to the capability of ambidexterity of [31]. Even further the moderation will need to be reconfiguring context depended, but has to provide enough stability to not create uncertainty again, which might harm UGC creation. This might help to build the base for "involvement and trust" [16; p. 43] and a culture "based on collectivism and low power distance" [16; p. 43] to generate managerial setting for a stewardship relation. With the idea of educating the users and providing them a service oriented structure the degree of UGC is assessed higher than for the self-organization approach. A summary of the assessment from degree of corporate engagement and the added encouragement level of UGC can be found in Figure1.

From this discussion, we can not only derive the classification but also the need for moderation of an ESN at a certain time. Even in the low corporate engagement approach, top-management engaging as users themselves is somehow an act of passive moderation with the desire to motivate the users to generate content in the ESN. Also the prior mentioned investment argument will ask for a justification plan prior to the investment (e.g. [24]) or bring a post implementation review with it (e.g. [25]; even though sufficient ex-post reviews are not that prevalent). As the communication in the ESN evolves over time (e.g. [21]) the need for a certain corporate engagement is most certainly variating over time and maturation phases as well (e.g. active top management involvement as jump start in the beginning). Consequently, corporations will probably need to constantly reassess their engagement level based on the ESN usage evolution.

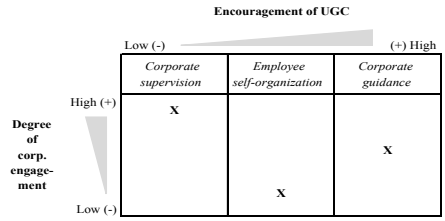

Figure 1 - Assessment of approaches

5. Limitations and outlook

Despite using a systematic approach there might be some limitations to this paper. First of all, we included only conference and journal papers except of [67]. This was done as a quality assurance, to have only fore mostly peer reviewed sources. Although, the main base of the articles are quality reviewed publications some smaller conference proceedings were included due to the subject relevancy. To account for the often made critiques of an Anglo-American research perspective, we included the EJIS and ECIS proceedings. Further, the initial keyword search was predefined in a broader sense, covering ESN literature in general. A few publications might have been neglected in the processes, which would have been covered, with an inductive second keyword search.

As this literature review aimed to identify implication given for practitioners, we compared findings of different methodologies and unique case study results. As this topic is quite young there was no other way as to review those publications together. Furthermore, not every article was solely examining the moderation question as the main research subject.

Nevertheless, this question was often a byproduct of the discussion and practical implications.

As we tried to answer the RQ from a literature base, we might lack the validation of own collected empirical data. Further, it became evident that those moderation approaches might depend on the context of maturation stages of the ESN implementation (e.g. [30] tracking the ESN activity at the start). Hence, it should be investigated if one approach might be more suitable in a certain stage. Here we propose a longitude case study, examining the evolution of the corporate engagement level in different ESN maturation stages. Furthermore, we did not consider cultural differences, which might influence the perception of a certain moderation approach and impact the users encouragement for UGC [61]. Here a survey based examination in a multinational enterprise with an ESN system might provide deeper insights of the espoused national culture impact on the user content generation.

6. Conclusions

Summarizing the research findings, we firstly identified three different corporate ESN moderation styles: corporate supervision, employee self-organization and corporate guidance. The corporate supervision approach tries to overcome the unstructured nature of social technology in a corporate context with strict policing, content monitoring and compliance characteristics. Contrary to this high corporate engagement style we presented the diametric employee self-organization approach. This moderation style is taking the transparency induced accountably of ESN services as a self-regulating mechanism. Although, the degree of corporate engagement is much lower there is still a passive engagement resulting from active top management usage. Then we presented the in the literature by far leading corporate guidance approach. This approach is located in between the latter two diametric styles. Here the corporation is educating the users about the ESN properties and possibilities to change the current work practices. The degree of corporate engagement is higher as in the self-organization style, but still lower compared to the corporate supervision approach.

Secondly, we discussed which of the approaches is encouraging more UGC in order to foster ESN activity. We credited the corporate guidance approach with being an UGC motivator followed by the self-organization approach trailed by the corporate supervision style.

Our third finding was the need for a corporate moderation, based on the competition with other communication technologies and the monetary IT investment argument.

With comparing diverse topics and searching for moderation methods identified in the ESN literature, we could build a first generalization of the three named approaches. This added novelty to the ongoing discourse of how to establish an ESN within an enterprise and to attract UGC. Building on this literature review we provide a frame for future discussions. For practitioners we highlight, that the moderation level is related to the users' contribution behavior and that they have to think about the consequences of a chosen corporate engagement level.

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Appendix A2

Title:	**Enterprise Professional Diversity and Challenges for Social-Collaboration Technologies**
Authors:	Guhr, Nadine; Nolte, Ferry; Breitner, Michael H.
Published in:	International Journal of Business and Social Science
Link	http://ijbssnet.com/journal/index/3926

Abstract from Source Article:

This paper investigates the potential impact of a diverse work environment on the intention to use enterprise social collaboration technologies. In a larger organization, different work practices and technology perceptions collide, which complicate the successful implementation of an enterprise social network. The first assessment of this factors will contribute to the growing field of enterprise social media research. By conducting a structured literature review of the professional diversity phenomenon in the information system (IS)research literature and reference literature (e.g., management or psychology research) a synthesis for the enterprise social media research stream is made. The main findings are three impact clusters resulting from professional diversity:98task characteristics, occupational subcultures and personality traits. The three clusters have unique ways to impact the intention to use an enterprise social network, resulting in a first assessment of positive and negative impact factors for a successful implementation of such information systems.

International Journal of Business and Social Science Volume 9 • Number 1 • January 2018

Enterprise Professional Diversity and Challenges for Social-Collaboration Technologies

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Abstract

This paper investigates the potential impact of a diverse work environment on the intention to use enterprise social collaboration technologies. In a larger organization, different work practices and technology perceptions collide, which complicate the successful implementation of an enterprise social network. The first assessment of thisfactors will contribute to the growing field of enterprise social media research. By conducting a structured literature review of the professional diversity phenomenon in the information system (IS)research literature and reference literature (e.g., management or psychology research) a synthesis for the enterprise social media research stream is made. The main findings are three impact clusters resulting from professional diversity:98task characteristics, occupational subcultures and personality traits. The three clusters have unique ways to impact the intention to use an enterprise social network, resulting in a first assessment of positive and negative impact factors for a successful implementation of such information systems.

Keywords:enterprise professional diversity, social-collaboration technologies, enterprise social media, intention to use

1. Introduction

Organizations are implementing enterprise social media (ESM) into their corporate information and communication systems.They try to facilitate a better information exchange within the organization by utilizing the broad reach and easy information access through such social media tools (Leonardi *et al.*, 2013). The public media and software vendors commonly refer to those technologies – e.g., micro-/blogs, social networking sites, and wikis(Denyer *et al.*, 2011) – as Enterprise 2.0 and are common in user features of profiles, relational connections and sharing/exploring (Boyd & Ellison, 2007).The ESM scope can be limited to intra-organizational platforms restricted to an employee's audience or can be usedas a social media platform for external stakeholder interaction (e.g., with customers, suppliers or investors)(Richter *et al.*, 2011). The main concept behind the first named intra-organizational context is to make the intra-organizational knowledge and information flow visible throughout the whole corporation to enable employee driven communication, collaboration, innovation, and knowledge sharing (Leonardi, 2014). Open communication of the employees over the ESM services, which in the same step allows other network members to participate - actively or passively –helps to integrate the employee in the information exchange process(Kügler & Smolnik, 2014). Consequently, the ESM tools are challenging the established corporate collaboration and knowledge management practices(McAfee, 2006).In order to gain this benefit of the improved innovativeness, it is important that the ESM services are used bya wide range of users(functional or structural) (Chin*et al.*, 2015) to facilitate workers' diverse information exposure (Cummings, 2004).

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For the intra-organizational utilization of an ESMthe discussion is driven by the support or substitution of internal communication, collaboration and knowledge sharing practices (Huang *et al.*, 2015; Leonardi *etal.*, 2013). The focus of research is the impact of employee`s performance on theESM usage(e.g., Kuegler *et al.*, 2015) and factors influencing individual employees motivation to engage or reject such platforms (e.g.,Chin*et al.*, 2015). As the ESM poses to revolutionaries and challenges current work patterns, first doubts appeared, that the social technology is perceived as useful by every professional background(Denyer *et al.*, 2011). Particular the digitalization of the workspace brings information systems (IS) (e.g., ESM access) to a more diverse workforce, including low skilled white collar workers and blue collar workers, adding knowledge work to their changing work environment (Sauer, 2014). The professionaldiversity of anorganization can be a challenge andmight affect employees'ESMusage and increases the complexity of a successful ESM implementation. The currentESM debate leaves an interesting research gap that possesses theoretical and practical relevance.The professional diversity can be a determinant of the success faced by organizations when implementing an organizational wide ESM service. Theoretically, the professional diversity perspective adds further insights to an under established IS acceptance domain and advances the ESM research field. Practically, it is from interest for organizations to have an optimal allocationof ESM implementation and change efforts between different professional groups. Therefore, we will address the following research question:

How is professional diversity influencing the ESMintention to use of employees?

2. Theoretical background

2.1 Technology Acceptance

The most well know and cited model is the technology acceptance model (TAM) introduced in by Davis (1989) and Davis et al.(1989). The TAM evaluatesindividuals'beliefs and attitudes to foresee once future behavioral intention to use a certain technology. Perceived usefulness (PU) and perceived ease of use (PEOU) have been identified as central constructs in predicting users' acceptance behaviors (Davis, 1989). PU was described "as the prospective user's subjective probability that using a specific application system will increase his or her job performance within an organizational context."(Davis *et al.*, 1989, p. 985) and PEOU as "the degree to which the prospective user expects the target system to be free of effort" (Davis *et al.*, 1989, p. 985).One central extension to the TAM was the introduction of social influence processes (e.g., social norms and image) and cognitive instrumental processes (e.g., job relevancy) and their influence on PU, which adds a new stream of external variables influencing the intention to use (Venkatesh & Davis, 2000). With the extended view and variables like job relevancy and social norms proof to have an influence on individual PU, professional diversity in terms of nature of task and professional norms might have a further explanatory role for the intention to use in this still underrepresented technology acceptance research stream (Sun & Zhang, 2006).

2.2 Professional diversity

The concept of diversity refers to differences between individuals on attributes that labela person different from oneself or others(William & O'Reilly, 1998). In the organizational context the performance and process impact are the primary subjects in diversity research (van Knippenberg & Schippers, 2007). The social categorization, similarity/attraction, and information and decision making theories are applied to understand how diversity affects performance and processes in groups(William & O'Reilly, 1998).The social categorizations concerned withthe conflict potential result from comparing individuals 'social identification. The information and decision making perspective, on the other hand, is more task-related and builds on the different information, knowledge and viewpoints. Here particular interest layson different processing patterns which are various within diverse groups (van Knippenberg and Schippers, 2007; William & O'Reilly, 1998).The main diversity elements in those assessments were age, gender/sex, ethnicity, tenure and background (William & O'Reilly, 1998). Among those,the functional and educational background of persons builds thebasis of the professional diversity understanding of this paper.Professional groups are generally distinguished by function and or educational background, where the latter can serve as an entry barrier to a certain professional group (Freidson, 1988).Anteby et al. (2015, p. 187)characterize professional groups as social entities including "(i) a category of work; (ii) the actors understood - either by themselves or others - as members and practitioners of this work; (iii) the actions enacting the role of occupational members; and (iv) the structural and cultural systems upholding". Consequently, professional diversity is a categorization of social groups byfunction which is socially influenced by subcultures (Schein, 1996), but it is also understood as different information processing attributes. That is because different professional groups perform distinctive task bundles associated with a work category.

Professional diversity can be operationalized by the "differences in kind or category, primarily of information, knowledge, or experience" (Harrison & Klein, 2007, p. 1200).By adding beliefs as part of the operationalization we can account for subcultures mentioned by Schein (1996). Therefore, we can provide a social influences perspective (e.g., culture, norms) of different professional groups and the same time highlight cognitive information processing (e.g., task characteristics) differences.

2.3 Enterprise social media – Task relevancy and visibility

The importance of the progressing ESM research field originates from the strong focus of practitioners on the social collaboration technologies(Kane *et al.*, 2014). McAfee (2006) defined the intra-organizational useofESM services as a new meansfor knowledge workers toperform their occupational tasks. Knowledge work is "relatively unstructured and organizationally contingent" (Scarbrough, 1999, p. 7) and this particular way can be recorded by the ESMtoshow how "the way work really gets done" (McAfee, 2006, p. 21). The unstructured nature of ESM applications(Herzog *et al.*, 2015)seems to unfold its potential best when applied to non-routine tasks (Kuegler *et al.*, 2015). In detail, the visibility concept of user generated expertise suggests that ESM applications benefit tasks that "not only require novel solutions but require others' inputs" (Majchrzak *et al.*, 2006, p. 102). The example of seeking the expertise of others to complete a task with an unknown outcome characterizes the flexibleESMtask nature as non-routine,unstructured, collaborative, and interdependent.The named characteristics provide a first assessment when social media tools become task relevant and could be perceived as useful by the employee. Innovative non-routine jobs are only one part of a diverse occupation spectrum in organizations, especially by comparison to industrial and manual labor sectors like the automotive industry. It is questionable that those tools are meant for all organizational members and represent the next level of work practices (Raeth *et al.*, 2012). A particular focus in regard to professional diversity should be allocated to the visibility property of the ESM. With anofficial identity in an ESM platform,the employees become accountable for the information they provide to an anonym corporate audience (Treem, 2014). Additionally to the accountability constraint, uncertainty, induced bytheunrestricted access and edit rights toemployee-generated information, might conflict with the employees sharing behavior(Mansour *et al.*, 2011). Employees somehow displaying introversion traits or do not appeal to an open conflict culturecouldfeel intimidatedby those ESM properties(Mansour *et al.*, 2011). One could argue that the acceptance primary depends on the organizational culture, but the professional subcultures within an organization are determinants of the organizational culture (Bloor & Dawson, 1994).Consequently, professional diversity relates also to the social processes which might affect the acceptance of a certain professional group. As the ESM is a context depending technology (Richter& Riemer, 2013)those occupational influenced cognitive and social perspectives on the acceptance demand for particular investigation in this regard.

3. Research Design and Methodology

Since ESM is a relatively new research field, the existing body of literature is small and a common definition of ESM has not yet been developed. Therefore, consistent with Webster and Watson(2002), we conducted a rigorous and structured literature review of publications to identifying, analyzing, and conceptualizing relevant research literature pertaining job diversities integration into technology acceptance literature and its relevance for theESM research field. The rationale to use a literature review method is to structure the current body of knowledge in order to highlight what prior research has already uncovered and to conceptualize new opportunities to extend the evolving ESM research field with a special focus on job diversity. With respect to Schryen(2015), the following structure was used: (1) framing, (2) search and assessment, (3) synthesis, (4) interpretation, (5) guidance and (6) conclusion to extend the current body of knowledge.The framing took place in Section 1 and 2 of this paper to assure an accurate problem setting and to guide the literature search process (Elliot, 2011). The second phase is devoted to the collection of authoritative sources to take the proposed focus and scope into account. To succeed in accumulating a relevant research literature pool, the focus was on high-ranked journals(Webster & Watson, 2002). Due to the interdisciplinary ofthe research field, the literature base was furthermore extended to other journals and conferences that are not primarily focusing on IS. For identifying academic papers on ESM and job diversity, we searched for papers via keyword search in the following database: AISeL, ScienceDirect, IEEEXplore, JSTOR, SpringerLink, ACM, Wiley, Emerald and InformsOnline. To further extend the basis, a forward and backward search, as suggested by Webster and Watson (2002), was conducted. Furthermore, different search term combinations were used to account for different language usage (e.g.,Barki*et al.*,2008) and to refine for relevant sources (e.g.,von Brocke *et al.*,2009). The search terms applied were "enterprise social media", "enterprise social network", "enterprise social software" and "enterprise social networking".

ISSN 2219-1933 (Print), 2219-6021 (Online) © Center for Promoting Ideas, USA www.ijbssnet.com

In combination with "job category", "job diversity", "occupational culture/diversity", "professional culture/diversity" and "job characteristics". After this first round the results for ESM related literature proofed low in a number of quantity (e.g., only 6 hits at ScienceDirect) which did not bear relevant discussion points. The search field was expanded from ESM to more general related concepts like "technology acceptance" and "technology adoption". To select relevant publications in the considered research field, inclusion and exclusion criteria were defined. First, only literature in English language with a strong focus on ESM was considered. Second, non-academic publications (such as white papers) and those that did not specifically deal with job diversity as defined were excluded. The databases were searched to determine whether a publication contained at least one combination of the search terms in the title, abstract or keywords. In total, 110 publications were identified. Additionally, the reference literature from other fields like human relation, psychology, sociology and communication, to name the biggest four reference streams,amounts to 59 articles. If the field of search (i.e., title, abstract or keywords) could not be specified in the search query, a full-text search was conducted. In most cases, papers that we omitted did not yield any insights with respect to our research object or used the keyword in a different manner. After screening our database based on the before mentioned exclusion criteria, 61 academic papers remained (see Table 2).

Cluster	**Description**
Task characteristics	Characteristicsoftask e.g., non-routine vs.routine
Culture	Socialinfluence e.g., professional normsor professional subcultures
Personality	Personalitytraitsof professional groups e.g., extraversion vs. introversion

Table 1 - Clustering of Literature

The papers range from theoretical explorations of the ESM concept and job diversity to empirical studies and summaries of practitioner case studies. In Phase 3, we tagged each paper with keywords indicating the model/theory applied and its level of analysis in regard to job diversity. The phase 4 and 5 include activities such as connecting, comparing and explaining (Schryen, 2015) and we will give an outlook where this research is highlighting interesting novel themes. In phase 6 we will briefly summarize the results in order to extent the current body of knowledge in the underlying research field.

4.Research results and findings

Based on the previous assessment of ESM properties and professional diversity dimensions we screen the literature and identified three main clusters, which are shown in Table 1. The articles of the "task characteristic" cluster reviewed the task features (e.g., that an office clerk has a monotonous job routine compared to the professional group of engineers)(Zeffane & Gul, 1993)and consequently separated professionals by tasks. When the ESM would deliver job-relevant information, the influence on the intention to use would here result from the cognitive instrumental processes connected with the PU. Existing cultural differences between professional groups(Schein, 1996)constitute the second main cluster. The subcultures resulting from social influence processes like education or specific professional standards show that there are differences in, e.g., the level autonomy or openness between different occupations(Chau & Hu, 2002; Mitchell & Boyle, 2015). The third cluster personality is based on the idea that specific personality traits are stronger in specific professional groups like in the accounting field(Andon *et al.*, 2010).

AmountofSources			
Outlet / Category	Different levels	Onelevel	Total
IS Outlet	*5*	*30*	*35*
Culture	3	12	15
Task characteristics	1	14	15
Task characteristics / Culture	1	4	5
Other outlet	*10*	*16*	*26*
Culture	3	6	9
Personality		4	4
Task characteristics	4	5	9
Task characteristics / Culture	3	1	4
Total	*15*	*46*	*61*

Table 2 - Distribution of clusters among outlet and level of analysis

In Table 2 it is shown that majority of sources did evaluate only one level of analysis (e.g., studies either looked at culture or task characteristics from the professional level). Some articles apply a multi-level analysis examining different objects to show the interplay of, e.g., organizational and professional culture. The main clusters were "task characteristics" and "culture" with an even distribution within the literature sample. Interestingly, the task characteristics where dominant in the IS outlets. The personality cluster could only be obtained in none IS literature, with a particular connection to the professional diversity. Only afew articles addressed culture and task characteristics to some extent simultaneously.

4.1 Task characteristics

In the first main cluster, the literature highlighted differences in the technology acceptance by task difference of users. In a recent study Laumer et al. (2016) evaluated with a work system theory modified TAMhow employees' work routines influence the resistance to use a novel technology which impacts their task execution. In their case study research, they measured PU and PEOU from a technology angle and a work routine angle for the HR department. The findings indicate that the technology PU and PEOU where not the main resistance predictors, but the perception of the PU and PEOU for the changing work routines are. As this survey was only evaluates one professional group, the authors limit their findings by indicating that the perception or requirements might differ between different occupations. This idea that different professions have different requirement for IT is also the object of analysis in Yang et al.(2009)study between a group of innovative and non-routine knowledge workers and a routine and repetition characterized student group. The TAM based study revealed, despite the social influence main theme of the paper, that the different task characteristics indeed had a moderating influence. The knowledge workers give more significance to the PU as they needed a tool to support the quest for innovative solutions and the student control group was more concerned about the PEOU to replicate an existing solution. Following the thought of different requirements, Lucas and Spitler(1999) suggest that the various uses of technology by salespeople and brokers originate from different task characteristics of this two professional groups. They extend their findings to be further proof of the incomplete predictive power of the original TAMwithout social and cognitive process variables.Showing similar results in the healthcare sector, Henderson et al. (1995)evaluated the resistance to use a new computer system between clerical staff and nurses based on their computer anxiety. The results indicated that nurses did have significantly higher anxiety towards computers and the authors relate this to the prior computer experience of the office clerks. Besides the anxiety, the study suggests thatthe tasks of the nurses were not having characteristics supported by the patient management system. Regarding the earlier mentioned innovation characteristic of a certain task, Stone and Shen (2008)argue that professionals with an innovative or creative and therefore non-routine task, tend to use more emerging technologies in their work activities. Due to the changing work task, those employees are more adaptable in their work routines. The recurring theme of non-routine and routine task characteristics is subject by Sun and Zhang(2006)in a meta-analysis of moderating TAM variables. They recognize PEOU as being more relevant to non-routine task professions, as those users are more likely frustrated if the tools are not hard to operate when the real task lays in a complex cognitive ad-hoc analysis.Thus despite the presented extend TAM view on PU also PEOU seems to be influenced by the professional's task profile, contradicting to Yang et al. (2009).Regarding knowledge management systems Pee and Chua (2016)evaluate job characteristics and their influence on knowledge distribution. Although this article is not in particular related to technology acceptance, it bears some recent insights as ESM technology might be used as a knowledge management system, because sharing behavior might operate as a proxy for the intended usage of the tool. The results indicated that different professional groups tend to have different knowledge sharing behaviors concerning of duration, frequency, and topic variety. The only ESM related article from Jackson et al. (2007)analyzed theESM blogging behavior of employees. The case study revealed that professional groups differently used the blog functions. Their conclusion for the sample of engineers 'was that they are used to create things from their technical task background are more into creating content, thus writing blogs. The marketing sample has its strength in the communication of content and therefore comment and links different contributions and blogs.The IS outlets give a clear indication that the PU is indeed influenced from task characteristic diversity.Further, this diversity suggests evidence that the task nature might moderate the intention to use directly.The reference literature sample, focused on the performance effect of diverse team compositions, highlighting different task natures,task language and cognitive difference as impact factors (Cummings, 2004).It should be underlined that the management and organizational literature acknowledges the interplay of different levels and different concepts, e.g., that organizational culture might have an effect on a particular task behavior arising from the diversity(Anteby *et al.*, 2015; Cummings, 2004; Rice, 2012).

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Anteby et al. (2015)assessed that the current body of knowledge in the management and organizational literature did distinguish profession by their way of doing a task, proclaim a certain jurisdiction and also evaluating the emergence of new task activities helping new occupations to format and change existing work practices. Consequently, the task or activity itself associated with a certain professional group gives the explainable power to separate effects and therefore can be used as a variable to explain specific behavior towards an object or practice. We can transfer from that assessment that task characteristics describe the type of work a person executes in the organization and the technology is anobject which supports the task execution.Therefore, the reference literature grants the task relevance an intention to use a technology directly through task execution.

4.2 Occupational Cultures

Social norms are part of well-respected cultural definition by Hofstede (2001), and Trice and Beyer (1993). Consequently, cultureis a frequent theme in the IS acceptance literature, but a comparison between different occupational cultures was not often subject to investigation (e.g.,Chau & Hu, 2002; Leidner& Kayworth, 2006; Nistor *et al.*, 2014; Raitoharju&Laine, 2006; Yang *et al.*, 2009).Nistor et al.(2014) compared the influence of professional and national culture from a TAM derived Unified Theory of Acceptance and Use of Technology(UTAUT). The study comparedRomanian and German cultural differences, but they subsample the nations into an educational (e.g., background in science, technology, engineering or mathematics) and none educational professional groups. With Hofstede's (2001) cultural dimensions they showed differences between the two professional groups, assigning the subsample of none educational background "to be more authoritarian, more individualistic, more feminine, more uncertainty avoidant and less long-term oriented" (Nistor et al., 2014). These differences led to a further distinctions in the perception of "effort expectancy on use intention, and of facilitating conditions and computer anxiety on the use behavior"(Nistor et al., 2014) between the two groups. However, the greater significance on technology acceptance is devoted to the national culture and might raise the idea that there is an interplay between national and professional culture. That interplay is supported by Leidner and Kayworth(2006)theory of technology culture conflict. They formulate that conflicts are influenced by national differences or by the organizational level (e.g., Business Unit A has different values towards IT than Business Unit B) or the conflict can result on sub-unit level due to different IT values. For sub-unit level, they propose that the stronger the values of the sub-unit are contradicting to the value associated with the new IT (e.g., high openness to information access, but the IT limits the access), the lower the adoption by the sub-unit. Accordingly, not only the cultural values of the organizational member but also the IT itself carries beliefs that either fit the professional group culture or not. Coming back to a TAM based study, Chau and Hu (2002) evaluated the acceptance of telemedicine of healthcare professionals and compared it with general TAM findings, showing that the original TAM weakens its explanatory power when applied in a professional context. They have shown, that PEOU, contradicting to general user studies, had no significant influence on PU or the attitude construct.Raitoharju and Laine (2006)further have shown that the TAM construct PU is differently influencing the "intention to use" of three professional groups (physicians, nurses and office clerks) highlighting the thought of Leidner and Kayworth (2006) again. Here the findings of Rao and Ramachandran (2011) seem noteworthy which compared management and IS employees culture. The biggest difference between the two groups is the object under management. Whereas IS professionals are managing technology, the managerial culture is human relation oriented. This difference is also the subject of a descriptive case study of Meier (1999), highlighting that even in perfect information symmetry professional diversity will influence the perceptions of its group, due to different representation and cognitive reasoning styles. In this study, the engineering group is much more abstract than the experience based culture of operators when it comes to technology innovation. That disparity suggests that the requirement for a technology comes from theprofessional groups' cultural background and their vision and/or goals. Professional culture diversity, is also a research subject in the IS security domain comparing IS security perception in regard to the professional background and its associated information confidentiality needs (e.g.,Ramachandran *et al.*, 2013).Due to the visibility information in an ESM service, we assumed the IS security in this term as reference field within the IS domain.Like the technical object in the acceptance literature the IS security beliefs are influenced by occupational distinct beliefs. Moreover,different security cultures lead the professional groups to different behavior based on their production-oriented or control-oriented professional environment (Ramachandran *et al.*, 2013). Same can be attributed to sharing culture,whereas the professional background had a significant influence on how collaboration features of IS are viewed(Tan & Vathanophas, 2003).Thenon-IS outlet seem to be clearly used as a reference point for some of the IS studies as they use similar ideas and concepts.

The literature focuses on the interplay of different cultural levels (e.g., national, organizational and occupational), revealing that conflicts arise from professional subcultures which makes the management of different subcultures necessary(Cummings, 2004; Schein, 1996; Trice & Beyer, 1993).Antebey et al. (2015)suggest that the cultural salience of the organizational status of different professional groups is a more distinct demographic like e.g., gender or ethnic. Consequently, professional diversity is manifested in the way how different functional groups relate to another. This cultural salience of different groups, can also be a source of innovation as this makes different professions to be aware of each other, enabling interaction(Mitchell & Boyle, 2015).Nevertheless, DiBengo & Kellog(2014)argue that professional groups can relate to other professional groups on a single shared social artefact, even if the they no further common ground or beliefs. The professional culture diversity in the organizational interplay is a complex phenomenon, with several connections to different cultural levels.

4.3 Personality traits

Personality traits and technology acceptance are single topics of interest but these studies did not consider occupational demographics (e.g., Barnett *et al.*, 2015;Devaraj*et al.*,2008). The professional diversity component could not be obtained to the best of our knowledge.Nevertheless, in the reference literature we encountered several articles making the connection between personality traits and professional diversity. More recent research following the idea and indicating that the personality traits play a role in the job selection, suggesting that e.g., people with a high level of extraversion will choose jobs with social interaction(Andon *et al.*, 2010).However,a small sample of job performance literature, can be connected as TAM constructs like task relevance and data quality and the PU construct are associated with job performance(Davis *et al.*, 1989).Barrick and Mount (1991)examined which of the big five personality traits (extraversion, emotional stability, agreeableness, conscientiousness, and openness to experience) predict performance in a certain occupation.The findings show that there are, except for conscientiousness,differences in the job performance prediction. Extraversion was a better performance indicator for sales or manager jobs, than for technical professionals where the human and social interaction is not such a strong job part.Underpinning personality traits as an occupational performance indicator, Salgado (1997)highlighted that different professional groups had different personality factors of the big five.Personality traits like extraversion and openness to experiences being particular important in job context of social interaction. Similar findings by Hurtz and Donovan (2000)relate extraversion to sales and managerial jobs and openness to customer service, again pointing to jobs with a strong social interaction, where also agreeableness was seen as a performance enhancer. Consequently, when there are specific characteristics influencing the job selection and on the other hand these personality traits influence the performance, there might be a connection that personality traits will influence the way professional groups perceive a certain technology.

5. Research Synthesis

The impact of professional diversity on the technology acceptance manifests itself on multiple levels. The IS literature was often following the single level approach, despite the ambivalent interrelation in the reference literature. That one-dimensional focus underlines the need for multi-level analysis in terms of system usage evaluation or prediction (Burton-Jones and Gallivan, 2007). Based on the clusters identified in the literature,we propose in Figure 1an assessment of professional diversities impact on the technology acceptance in the context ofESM applications.

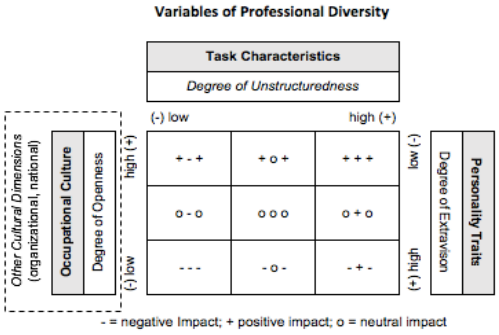

Figure 1 - Professional diversity and its impact on ESM acceptance

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The first variables identified are the task characteristics. ESM platforms are implement for the entire organization and not only for a single specific user group(Huang *et al.*, 2015; Kuegler *et al.*, 2015; Treem, 2014)and therefore these platforms are confronted with professional diversity regarding different task natures of the users. When considering that the ESM technology received wide contributions examining knowledge workers (Denyer *et al.*, 2011; McAfee, 2006; Stock & Gross, 2016), there is some variety missing.Subsequently, ESM services show a good fit for unstructured task natures.Although knowledge workers are an increasing workforce group (Burke & Ng, 2006), there are still industries concerned with,e.g., production. A production worker who executes routine task might not gain any benefit from the ESM usage. Similarly, other low-skilled white collar groups like office clerks suffer from unstructured ESM architecture, which might even hinder their workflow of routine tasks.As displayed sections before, the task relevance is a major driver of the PU in the technology acceptance literature. There is evidence that the PU of a change in work practices, has an impact on the intention to use.As the ESM is fundamentally challenging existing work practices, the professional diversity has an impact on the PU through task relevance.The intention to use might also be moderated from work routine perspective. Consequently, employees whose tasks are characterized by a high degree of unstructuredness, will show a higher PU and more likely intended to use an ESM.Here we should remark, that even professional groups with an unstructured task might not intend to usethe ESM, if it does not offer a greater benefit from existing practices. The personal change effort will still be barrier if the change utilization does not improve enough.The cultural component of the ESM technology is driven by an open communication culture with the visibility, accountability, collaboration,and openness at its core (Chin*et al.*, 2015; Huang *et al.*, 2015; Leonardi, 2014; Treem, 2014). The review showed the existence of several differences in the culture devoted to professional diversity, primarily driven by social influence processes.Professional groups embedded into an open and collaborative culture will more likely to perceive the ESM as useful or be curious to use it. As with the task characteristics, that cultural frame fits the autonomy preferring knowledge workers(Burke & Ng, 2006; Scarbrough, 1999). However, the direct personal exchange component is missing in the ESM environment, which can cause difficulties for professional groups, like for blue-collar workers, where interpersonal communication is prevailing.Furthermore, culture is a cluster with several levels, which account for interdependencies.That highlights that here caution is needed when interpreting findings only accounting for one level. The review showed the different objectification of culture. It was either incorporated in the IT artifact itself or concerned with the general common mindset of an occupation. Based on the IT conflict culture theory it can be argued, that professional groups with contradicting values towards the social and collaborative nature of theESMtechnology will not intend to use it (Leidner & Kayworth, 2006; Stock & Gross, 2016). One other aspect derived from the IS Security subculture presence is that there might be different needs for information and different associated responsibilities regarding who needs to secure the data (Ramachandran *et al.*, 2013). Therefore, we argue that professional groups which tend to have a strict information security culture (enhanced by law or professional standards), will not intend to use the ESM, even though the tools might be perceived task-relevant.The last cluster was interestingly underrepresented in the literature in connection with professional diversity. That might be related to the avoidance of archetype thinking. Chin et al. (2015) found the user's personality to bean enabler towards a positive ESM services attitude. Literature from the common use of social media like Facebookor the internet use suggests that extraversion is accounting for group participation of users, but that the same usersarenot the widest connected people or frequent users of the communicative features(Ross *et al.*, 2009). That might be related to the missing in-person interaction associated with extroverts, which social internet applications are not providing(Landers & Lounsbury, 2006). Therefore, we need to be cautious, when applying findings of the organizational and management literature to a computer-mediated collaboration and communication environment. Personality traits in the general technology acceptance show that the big five traits have an influence when considering individual behavioral intention preferences.Although for extraversion, the technology acceptance seems not to have a direct impact on the intention to use (Barnett *et al.*, 2015; Devaraj *et al.*, 2008)there is evidence that it moderates the impact of norms towards the intention to use (Devaraj *et al.*, 2008).Same can be attributed to the openness to experience trait (Barnett *et al.*, 2015; Devaraj *et al.*, 2008). However, openness to experience is linked in public social media studies as a measure of willingness to try computer-mediated social interacting(Ross *et al.*, 2009). Professional groups that showa high degree of extraversion might tend to be less likelyto use ESM services for collaboration or social interactions. They prefer other more personal channels.

6. Limitations

This study is subject to some limitations, some of which offer opportunities for future research. Firstly, we tried to incorporate peer-reviewed sources predominantly to assurethe literature quality. Although, the main base of the articles are quality reviewed publications some smaller, but frequently cited and subject relevant conference proceedings or books were included. Secondly, the initial keyword search utilized a combination of two search terms in combination. A few publications might have been neglected in the processes, which would have been covered if an inductive second keyword search would have been performed after the clustering. Finally, we did not provide an empirical validation of our proposed assessment matrix, which will be done in a future research work.

7. Conclusion and Outlook

The systematic literature review shows that professional diversity regarding social categorizing and cognitive information processing has an impact on the technology acceptance. Based on thereview, we synthesized how professional diversity might affect theESMacceptance, with particular regard to ESM characteristics. We identified three clusters of potential differences: (1) task characteristics, (2) professional subcultures and (3) personality trait differences. We highlighted with this clustering that professional diversity is a complex concept and that differentprofessional groups have different perceptions or requirements when they are confronted with new IT. These three clusters give practitioners the first indication that they need to consider the difference between professional groups, particularly for the "intention to use" when they want to implement anESM system. They can identify pioneer groups for the implementation, based on the three clusters and devote the additional change management efforts to groups which do not fit the non-routine task, open culture or openness to experience personality trait profile. Theoretically, we contributed to an underrepresented technology acceptance stream, highlighting that there are different levels to recognize when researching multifaceted concepts like professional diversity. PU proofed to be a powerful construct to measure differences in a diverse professional user setting. For the ESM research stream, we highlighted that ESM platforms are made for knowledge workers, which fit the unstructured and open nature of the ESM services. Organizations with a professional diverse workforce have employee groups which do not match these characteristics. Consequently, it would be for future research to investigate these differences between knowledge workers and the other employee groups. Especially, theoccupationally related perception and critical success factors of such social collaboration toolsare an interesting research field.

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ISSN 2219-1933 (Print), 2219-6021 (Online) *© Center for Promoting Ideas, USA* *www.ijbssnet.com*

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Appendix A3

Title:	**Enterprise Social Media Moderation and User Generated Content Quality: A Critical Discussion and New Insights**
Authors:	Nolte, Ferry; Guhr, Nadine; Breitner, Michael H.; Badtke, Larissa; Göing, Katharina
Published in:	Proceedings of the 27th European Conference on Information Systems (ECIS)
Link	https://aisel.aisnet.org/ecis2019_rp/94

Abstract from Source Article:

Social network platforms in enterprises are an increasingly important phenomenon. Thus, the participation and content generation of users are critical aspects of the sustainable use of these enterprise social media (ESM) services. However, at the same time, organizations need to ensure the quality of user-generated content (UGC), which remains a challenge for ESM moderation. In this structured literature review, we investigate measures to identify high-quality UGC and organizational approaches to promote such UGC. We categorize our findings as textual-, content appraisal, network- and author-based measures. We follow up by assigning each measure to a motivation and localization approach. We reflect on opportunities to transfer public social media measures into an ESM environment. We conclude our examination of UGC quality by integrating the UGC quality dimension into an ESM moderation framework and by outlining implications for research and practice.

Appendix A4

Title:	**Organizational Challenges for Enterprise Social Media at the Shop Floor**
Authors:	Nolte, Ferry; Guhr, Nadine; Breitner, Michael H.
Published in:	25th Americas Conference on Information Systems, AMCIS 2019
Link	https://aisel.aisnet.org/amcis2019/social_computing/social_computing/8

Abstract from Source Article:

Shop floor workers are at the center of the digital transformation of manufactures. Information systems and knowledge-work are becoming part of a former digitally disconnected workforce group. The change from routine task execution to knowledge provision is a challenging task for organizations and its shop floor workforce. To manage the complex transition information and communication technologies (ICT) like enterprise social media (ESM) can be the first step to empower the shop floor for its new organizational role. We present a case study in which we evaluate an ESM integration from the workers' perspective and develop shop floor ESM use cases. Based on the workers' perspective we derive and discuss organizational challenges that come with an ICT-enabled empowerment process. We contribute to ESM research by adding a

Appendix A5

Title:	**Future of Flexible Work in the Digital Age: Bring Your Own Device Challenges of Privacy Protection**
Authors:	Degirmenci, Kenan; Shim, J P; Breitner, Michael H.; Nolte, Ferry; Passlick, Jens
Published in:	Proceedings of the 40th International Conference on Information Systems (ICIS)
Link	https://aisel.aisnet.org/icis2019/mobile_iot/mobile_iot/2

Abstract from Source Article:

The future of work is getting increasingly flexible due to the rising expectations of employees away from traditional 9-to-5 office work towards flexible work hours, which drives employees to use their mobile devices for work. This ever-growing phenomenon of Bring Your Own Device (BYOD) creates security risks for companies, which leads to an implementation of mobile device management (MDM) solutions to secure and monitor employees' mobile devices. We present insights from two multinational case companies, where works councils have expressed their concerns for privacy intrusion into employees' lives through BYOD. To examine whether employees share works councils' concerns, we conducted a survey with 542 employees from three countries: United States, Germany, and South Korea. Results of a structural equation modeling show that American employees place greater emphasis on BYOD risks associated with privacy concerns compared to employees from Germany and South Korea.

Appendix A6

Title:	**The Journey towards Digital Work Empowerment - Conceptualizing IS-Induced Change on the Shop Floor**
Authors:	Nolte, Ferry; Guhr, Nadine; Richter, Alexander
Published in:	Proceedings of the 41th International Conference on Information Systems (ICIS)
Link	https://aisel.aisnet.org/icis2020/is_workplace_fow/is_workplace_fow/17

Abstract from Source Article:

Information systems (IS), introduced as part of the digital transformation efforts of many manufacturing companies, redefine the role of a prior digitally disconnected workforce group: Shop floor workers (SFWs). Their evolution - from routine workers to empowered operational knowledge workers and process facilitators - challenges both the individual and the organization on various levels. Based on insights from an in-depth case study, we explore the digital transformation journey of a large-scale manufacturing company between 2016 and 2019. Analyzing data from interviews with 24 SFWs and applying the theoretical lens of technological frames allows us to highlight complex interrelations between IS-induced change, the mindset change and the work practices change. We revisit our analysis of the technological frame perceptions via a reflection with organizational executive experts and develop a more holistic understanding of IS-induced change.

Appendix A7

Title:	**An Empirical Analysis of the Influence of Information Privacy Concerns on Enterprise Social Network Usage**
Authors:	Guhr, Nadine; Nolte, Ferry; Lohse, Thomas; Breitner, Michael H.
Submitted:	In submission process
Link	Not yet available

Abstract:

Enterprise Social Networks (ESNs) continue to have a transformative influence on the everyday working life and on how people communicate, consume, create, and collaborate in all types of organizations and across all business areas. However, while ESNs promise efficiency and effectiveness gains in theory, in practice, their implementation successes fall short of expectations. The disclosure of personal information may release users' information privacy concerns, which can in-duce users to avoid the ESN usage. To address this gap, the focus of this study is to identify relevant information privacy concerns of ESN users, as well as to analyze their influence on the intention to use ESNs. A research model is developed that is empirically tested by means of structural equation modeling (PLS-SEM). Our study takes an interactional psychology perspective, linking information privacy concerns to employees' intended ESN usage by exploring how and why privacy concerns influence the intended ESN usage, also taking the moderating role of personality traits into account. Our empirical findings emphasize the importance of information privacy concerns because they are negatively associated with the intended ESN usage. While our results do not confirm a significant influence of perceived trust and risk on the intended ESN usage, our findings emphasize the importance of information privacy concerns as this also influence the perceived trust and risk. Drawing from our findings, implications for practitioners and future IS re-search are derived.

Attached hereafter the full research manuscript. For the journal submission alteration may be done.

An Empirical Analysis of the Influence of Information Privacy Concerns on Enterprise Social Network Usage

Declarations of interest: none

Abstract:

Enterprise Social Networks (ESNs) continue to have a transformative influence on the everyday working life and on how people communicate, consume, create, and collaborate in all types of organizations and across all business areas. However, while ESNs promise efficiency and effectiveness gains in theory, in practice, their implementation successes fall short of expectations. The disclosure of personal information may release users' information privacy concerns, which can induce users to avoid the ESN usage. To address this gap, the focus of this study is to identify relevant information privacy concerns of ESN users, as well as to analyze their influence on the intention to use ESNs. A research model is developed that is empirically tested by means of structural equation modeling (PLS-SEM). Our study takes an interactional psychology perspective, linking information privacy concerns to employees' intended ESN usage by exploring how and why privacy concerns influence the intended ESN usage, also taking the moderating role of personality traits into account. Our empirical findings emphasize the importance of information privacy concerns because they are negatively associated with the intended ESN usage. While our results do not confirm a significant influence of perceived trust and risk on the intended ESN usage, our findings emphasize the importance of information privacy concerns as this also influence the perceived trust and risk. Drawing from our findings, implications for practitioners and future IS research are derived.

Keywords: Privacy, Enterprise Social Network, Trust, Risk, Personality Traits, Structural Equation Modelling

1. Introduction

Social Media comprises a variety of technologies and functions, such as Blogs, Wikis, Podcasts and Social Networks (SNs) (Antonius et al., 2015). Social media are fundamentally changing the way we communicate, consume, create, and collaborate, both within and outside the boundaries of organizations (Aral et al., 2013). They represent one of the most transformative impacts of information technology on organizations (Aral et al., 2013) and the demand for efficient communication and collaboration tools is steadily growing in a business context (Fisher et al., 2016). Not least, because of the increasing relevance of the internationalization of businesses, extensive project work and expert knowledge. The associated changes offer a series of advantages that are relevant for both, final users and organizations. Organizations across all business areas implement Web 2.0 tools for the internal application. Hence, this enables employees to share information and to support collaboration with costumers and business partners. One group of these tools receives particular attention in the corporate context and is designated as Enterprise Social Networks (ESNs). The utilization of software and networks for collaboration and knowledge exchange in organizations is enjoying ever-growing popularity and is an evolving research field of information systems research. ESNs enable employee-driven collaboration, communication, innovation, and knowledge sharing and therefore support employees and teams to handle internal communication efficiently and make sure that every employee receives the right information at the right time (Leonardi et al., 2013). Due to ever shorter innovation cycles and arising new technologies (e.g., cloud storage and other collaboration tools) employees are exposed an ongoing change in their work environment that requires a permanent adaptation of their way of working. However, upon scrutiny of the progress of

implementation in practice, inter alia the absence of employee participation prevents organizations from extensively realizing their objectives. Therefore, acceptance of ESNs demands that such an application must strictly respect both information privacy concerns of the users and enterprise security policies. The central research topic constitutes the degree to which the employees are willing to adopt and use the system in their daily work (Berger et al., 2014). Especially during the launch phase of ESNs, it is important to stimulate the comprehensive adoption of new technologies. This suggests that organizations, as well as researchers should evaluate different reasons for employees avoiding the ESN usage, since the technology acceptance constitutes the fundamental basis for implementing new information systems (IS) (Antonius et al., 2015). The importance of investigating factors influencing the adoption and use of ESNs has already been recognized in the scientific literature (Leonardi et al., 2013; Chin et al., 2015; Mettler & Winter, 2016). The impact of using enterprise social media on employee performance and contribution to knowledge management was also examined (Kane, 2017). But the existence and influence of information privacy concerns on the adoption and use of ESNs is still an area of little research.

Because in such ESNs, sensitive and personal information is also collected and transferred, the topic area of data privacy play a decisive role. ESNs differ from other public SNs in ways that have important implications for employees' privacy. But, similar to public SNs, ESNs work with user profiles implying the disclosure of personal information. Moreover, forum and blog entries are visible for every network member, which could lead to a comprehensive perception of transparency of employees' activities and opinions. This also expands the view of social networks and ESNs and privacy concerns of the users, since these, unlike, e.g., in the e-commerce sector, have to be extended by (1) unclear boundaries of privacy, (2) complexity of social interactions.

Therefore, chances and challenges including risks and threats for both employees and organizations are already comprehensively examined and discussed in the current literature. Additionally, the influence of information privacy concerns on technology acceptance and behavioral intentions has been the topic of various previous research activities and in the course of different technologies and IS (e.g., Zhang et al., 2018; Shin, 2010; Dinev et al., 2006; Brown & Muchira, 2004). However, users' information privacy concerns that arise while using ESNs were not identified, yet. Also, the influence of information privacy concerns on the employees' behavioral intention to use ESNs has not been in focus of prior research (Buettner 2015; Mettler & Winter 2016; Osch et al. 2015). Our study supplements the literature on ESN usage by providing a rich model of how users' concerns for information privacy influence the behavioral intention to use ESNs. The aim of this paper is to contribute to academic research as well as derive an effective approach for practitioners. Therefore, an organizational information systems artefact (see Lowry et al., 2017) in form of a research model is developed and statistically tested. The paper will focus on users' privacy concerns arising from the application of ESNs and their influences on the usage behavior, examining risk factors and privacy aspects. For that reason, this study will analyze the literature and the state of knowledge on ESNs and the respective risk factors and privacy concerns, as well as already validated research models in this area. Based on the extensive literature review, the study will identify already validated privacy concern models and evaluate them in the context of ESNs. As a result, it can be examined whether or not the identified privacy concerns can also be applied for ESN usage. Arising from the stated objectives, this study attempts to answer the following research question:

RQ: *How do employees' concerns for information privacy influence the behavioral intention to use Enterprise Social Networks?*

In order to contribute to this research area and to derive for practitioners, in this study a research model is developed and empirically tested in order to get insights into relationship between users' information privacy concerns and the behavioral intention to use ESNs, thus presenting an organizational IS artefact (see Lowry et al., 2017). In the remainder of this article, we discuss different models subsequently developed with the intention of examining user privacy decision-making, e.g., the concepts of concerns for information privacy (CFIP) (Smith et al., 1996), the internet users' information privacy concerns (IUIPC) (Malhotra et al., 2004) and the mobile users' information privacy concerns (MUIPC) (Xu et al., 2012) identified in the research literature. Following this, hypotheses are derived and a conceptual model is developed that links these information privacy concerns to the intention to use ESNs. However, not only the direct influence is considered, but also the mediating effects of perceived trust and perceived risk. The methodology of the survey study is then described, followed by a section reporting data analysis results. Following the discussion and implications for research and practice, we conclude by pointing out limitations and giving an outlook for further research.

2. Theoretical Background

2.1. Privacy in Information Systems Research

The issue of privacy and the question about the disclosure of personal information is not a new matter. Privacy has been studied and defined in various fields like philosophy, anthropology, psychology, law and management (Smith et al., 2011), also well before the occurrence of modern technologies like the Internet. Privacy can be discussed in different environments including physical privacy, territorial privacy, and privacy of communications, information privacy, and location privacy (Karyda et al.,

2009). Starting in the early nineteenth century, privacy was simply defined as “the right to be left alone” (Warren and Brandeis, 1890). But the definition of privacy is not self-evident. As mentioned by Margulis (2011), present definitions lead to a sometimes inconsistent and heterogeneous scientific depiction of privacy. In many research articles a distinction between, e.g., physical and information privacy is not made (Dinev et al., 2013). The focus of our paper is information privacy in the ESN context.

Certainly, in a constantly evolving environment, in which especially information technologies grow rapidly, new challenges always occur that need to be mastered. The issue of privacy gained entry into modern business areas and is applied in multiple business fields like e-commerce, marketing and information technology usage (Phelps et al., 2000). As these businesses need to collect and process personal information to work properly and to create added value, the term privacy became much more complex and increasingly important and hence, also the term information privacy (Tan et al., 2012). Information privacy can be seen as the privacy of information and commonly refers to personal data that is stored on computer databases. The necessity to sustain information privacy is especially accurate to collected and shared personal information such as medical- and criminal-records, financial data or business related information. However, the issue of how personal information should be collected and handled and the correct information practices is the common crucial issue (Tan et al., 2012). The increasing relevance of privacy in developed information societies has been the object of numerous studies and has taken on an increasing importance. Smith et al. (2011) for example, classified information privacy into four definition approaches. They are: privacy as a human right, privacy as a commodity, privacy as a state of limited access, and privacy as the ability to control information about oneself (Smith et al., 2011). Today, data is collected increasingly faster and can be transmitted gapless and party in real-time. Especially data worth protecting, like personal information, need particular

attention. In the foreground of many considerations is the issue of to whom these data is available and who is able to get authorized or unauthorized access to it (Xu et al., 2012). The collection of personal information is therefore crucial for businesses to better understand their consumers and costumers. Many studies, in particular, have paid attention to find an adjustment between the marketers' need of information and the consumers' rights to privacy (Tan et al., 2012). Especially the consumers' willingness to provide and disclose personal information and the information gathering were paramount (Phelps et al., 2000). In the current literature, many studies expand these efforts with regards to IS (Bélanger & Crossler, 2011; Paine et al., 2007; Lin et al., 2012; Osatuyi, 2015; Junglas & Spitzmuller, 2008). Modern technologies and applications are based on the disclosure of personal information of their users to show full functionality. In this context, the behavioral intentions of users are frequently examined with regard to the disclosure of personal information. This aspect is intensified through the fact that IS oftentimes collect, transmit and share the consumers' information without them knowing about it (Tan et al., 2012). Certainly, the increased use of the Internet, as well as social networking and other forms of data sharing – where personal information are paramount – will continuously be in the focus of researchers and providers, but also users. Users and providers scrutinize the demanded information and question if the release of such information serves the overall usefulness of such technologies. This matter of contemplation of the personal information is referred to as information privacy concerns. According to Xu et al. (2012), information privacy concerns play a central role within IS research and is frequently used in the literature as the measure to quantify information privacy. To answer the question how and to what extent privacy concerns influence the users' intention to use specific technologies and software, it is

crucial to point out where these concerns come from and how they are defined. Therefore, the origin of information privacy concerns and the respective manifestation will be discussed in the following.

Privacy concerns can generally be seen as an individuals' awareness and assessment of risks concerning the violation of privacy (Tan et al., 2012). Nevertheless, different approaches exist to define and especially to measure information privacy concerns. The analysis of information privacy concerns can be assigned to efforts in attempting to understand the individuals' perception of benefits and risks to share personal information with other parties, such as organizations (Degirmenci et al., 2013). However, information privacy concerns are only used as a proxy for the concept of privacy sometimes. Certainly, there are also several studies that operationalize and conceptualize information privacy concerns in greater detail (Xu & Gupta, 2009). Thereby, a widely used approach is that these studies define dimensions and items as a construct to represent information privacy concerns. These constructs in turn are used to measure the influences of information privacy concerns on different aspects and in different contexts. The current literature proposes constructs, for example, concerning information privacy concerns in general, as well as in the Internet context or the context of mobile devices and applications (Smith et al., 1996; Malhotra et al., 2004; Xu et al., 2012). The respective studies elaborate on the explanation of the different levels of information privacy concerns or on the influences of information privacy concerns on disparate variables. Thereby, variables such as the willingness to share and to transact personal information online are of importance (Bélanger & Crossler, 2011). Findings show that information privacy concerns may have an effect on the attitude of individuals, such as their preferences and their willingness to be portrayed and to share personal information (van Slyke et al., 2006). In summary, the current literature suggests that three major instruments for representing information privacy concerns exists: The

Concern for Information Privacy (CFIP) (Smith et al., 1996), the Internet Users' Information Privacy Concerns (IUIPC) (Malhotra et al., 2004) and the Mobile Users' Information Privacy Concerns (MUIPC) (Xu et al., 2012). Regarding this, these three models and their respective dimensions and items will be presented in continuation, allowing one to evaluate which dimensions are of relevance and will therefore be taken into consideration for the development of the research model of the underlying study. The CFIP of Smith et al. (1996) was the first of these to be developed and is the most frequently used model. Generally, the CFIP is an overall approach that considers how organizations use, process and protect personal information. CFIP is a multidimensional construct that has four dimensions and is compiled of 15 items. The dimensions are the collection, the unauthorized secondary use, the improper access and errors in data (Smith et al., 1996; Stewart & Segars, 2002). The dimension collection describes the concern that a high amount of personal information is being collected and stored in databases and that these processes are carried out appropriately (van Slyke et al., 2006). The unauthorized secondary use of personal information represents the concern that information is requested for one purpose, but is inappropriately used for another purpose without the authorization of the queried individual. The third dimension is the improper access of data representing the concern that information and data of individuals are available to people who are not authorized to view, edit or work with such data. Concerns regarding errors refer to the individuals' concerns that the collected data is appropriately protected against intentional or unwitting errors (Smith et al., 1996; van Slyke et al., 2006).

The CFIP scale has been applied and validated as a reliable instrument and to a great extent in different contexts. Regarding this, it is applied e.g. in direct marketing (Smith et al., 1996), e-commerce (van Slyke et al., 2006) and in the healthcare field (Agarwal

& Prasad, 1998). Stewart & Segars (2002) empirically confirmed the reliability and validity of the CFIP scale. They proved that all dimensions of the CFIP could be used as a second order factor that account for the CFIP construct (Stewart & Segars, 2002). Also, other studies such as (Junglas & Spitzmuller, 2008; van Slyke et al., 2006; Korzaan & Boswell, 2008; Dinev & Hart, 2006) continue the research of the CFIP scale. Korzaan & Boswell (2008) and Van Slyke et al. (2006) also include the influence of the CFIP on behavioral intentions. Another relevant model is the IUIPC evolved by Malhotra et al. (2004). The authors adapted the scale of the CFIP from the one direct marketing context and modified it into the Internet context. The IUIPC defines three dimensions of privacy concerns, focusing on the perception of individuals concerning fairness and justice in the context of information privacy. The authors identified the IUIPC as “the degree to which an Internet user is concerned about online marketers’ collection of personal information, the user’s control over the collected information and the user’s awareness of how the collected information is used” (Malhotra et al., 2004). The arising IUIPC scale consists of 10 items. The first dimension of the IUIPC is the collection of personal information. Collection refers to the action to compile personal information regardless of whether it is authorized or not. This dimension is defined as the extent to which an individual is concerned about the amount of personal information that is owned by others compared to the benefits received. The second dimension control defines the state when individuals submit access and control over specific aspects of personal information to others, as well as the ability to keep the control over the collected information. The last dimension of the IUIPC is the awareness of privacy practices. This dimension refers to the perceived uncertainty of the usage of the collected data and to the extent of concerns about the individuals’ awareness of privacy practices performed by the organizations (Malhotra et al., 2004; Sipior et al., 2013). The final causal model by Malhotra et al. (2004) is also derived based on a trust-risk

framework that includes trusting beliefs and risk beliefs and their influences on behavioral intentions. The authors were able to show that the IUIPC scale could explain more of the variance in an individuals' willingness to share personal information, than the CFIP scale (Malhotra et al., 2004). Also, other studies such as the study by Shawn et al. (2010) were able to confirm these findings. However, it seems that the majority of studies concerning information privacy concerns still use the predecessor instrument CFIP, rather than the newly developed and apparently better working IUIPC. This trend could also be confirmed by the conducted literature review. Whether this is due to the fact that the research concerning privacy concerns had already started when the IUIPC was developed, or that the CFIP is simply seen as the factual scale for information privacy concerns, cannot be ascertained (Bélanger & Crossler, 2011). However, there are some studies that do use the IUIPC scale (Sipior et al., 2013; Shawn et al., 2010). Sipior et al. (2013) for example, used the IUIPC to assess its continued applicability and to measure the influence of privacy concerns on trusting and risk beliefs and in turn the influence on behavioral intentions. Even though, they were not able to fully validate the IUIPC scale, the authors conclude that the IUIPC is equally important to the CFIP (Sipior et al., 2013). The last instrument that needs to be mentioned is the MUIPC by Xu et al. (2012) which simultaneously constitutes the latest of the identified privacy concern instruments. As well as the already described IUIPC scale, the MUIPC originates from the CFIP and is represented as a 9-item scale. Xu et al. (2012) developed their privacy instrument by referencing to the Communication Privacy Management (CPM) theory – according to Petronio (2002) – and devise privacy concerns that occur for users by using mobile applications and devices (Degirmenci et al., 2013; Xu et al., 2012). The authors show that the boundary coordination rules of the CPM apply to reveal where privacy is concerned between the interactions of mobile users and providers. Xu et al. (2012) define three dimensions that are necessary to measure

mobile users' privacy concerns. These are: perceived surveillance, perceived intrusion and secondary use of personal information. The dimension perceived surveillance describes the state that an individuals' activities are viewed, recorded and stored (Solove, 2006). The author argue that users could strikingly perceive the surveillance of mobile apps due to heavy collection activities. Accordingly, this would lead to an open boundary structure with information that is highly permeable (Xu et al., 2012). The second dimension of the MUIPC is the perceived intrusion. This dimension refers to the violation of ownership rights, or rather the invasion in an individuals' life, such as the disturbance of activities or the destroying of solitude. This is warranted by the example of mobile apps that are entitled to make independent assessments about the collection of personal information (Xu et al., 2012; Solove, 2006). Lastly, Xu et al. (2012) define the secondary use of personal information as a relevant privacy concern. This dimension – which is already defined in the CFIP – describes the occurrence of connections of personal information that emerge without the users' awareness or authentication. Accordingly, the secondary use defines the usage of personal information for purposes that were not initially intended (Degirmenci et al., 2013; Xu et al., 2012). The MUIPC has its justification in the increasing prevalence and in the large acceptance of mobile devices which leads to an increased probability of threats to mobile users (Lom et al., 2016). However, it would appear that due to its short-term existence, the MUIPC has not yet been applied frequently in the current literature. Nevertheless, the MUIPC seem to be able – in contrast to its predecessor models – to represent the privacy concerns which arise with the application of newly emerging technologies, in a more appropriate way. Hence, the dimensions of the MUIPC seem to be more suitable to capture the powerful technical opportunities that are accompanied with the usage of modern technologies. The particular focus here is on emerging possibilities to collect, share, process and store data, in essence, personal information more rapidly (Xu et al., 2012).

However, the mentioned privacy concern instruments CFIP, IUIPC and MUIPC are built on one another and so, their respective dimensions and items constitute further developments. As a result, the perceived intrusion (MUIPC) finds its origin in the error and improper access dimensions (CFIP) and therefore is the dimension of control (IUIPC). The same is true for the perceived surveillance (MUIPC) and the collection dimension (CFIP & IUIPC), as well as for the secondary use of personal information that can be found in different instruments (CFIP & MUIPC) (Xu et al., 2012; Malhotra et al., 2004; Smith et al., 1996). Due to that, the dimensions include each other in some instances and do not need to be included into the research model in its entirety. Additionally, the literature review suggests that none of the underlying instruments is capable to capture the privacy concerns that walk along with the ESN usage in total. Thus, this study will apply a combination of the respective models and instruments, as this has already been done and recommended by other authors (Yang & Wang, 2009; Bélanger & Crossler, 2011; Shawn et al., 2010).That is why the different dimensions were juxtaposed and evaluated to be able to make a choice between which dimensions are appropriate for the underlying research model and paramount in the context of ESNs. Due to the fact that the selection of the relevant privacy concern dimensions will be taken under consideration of ESNs and their respective privacy and security aspects, the definition of the dimensions and the associated selection process will be carried in the next section.

2.2. Information Privacy Concerns and Enterprise Social Networks

ESNs embedded in a corporate context and are relatively new collaboration tools for the users and organizations (Nolte et al., 2017). Prior research like the case study of Degirmenci et al. (2019) shows that implementing new technological collaboration solutions triggers privacy concerns within organizational stakeholders. Additionally, the

case study of Laitinen and Sivunen (2020) highlighted potential information disclosure concerns between coworkers as new facet to privacy concerns in the ESN context. The privacy instruments and their dimensions were developed in different times and with various emphasis. However, the dimensions are thematically not equally well-suited to cover the privacy concerns that arise with the usage of ESNs. Due to that, privacy concerns in connection with ESNs need to be considered to be able to evaluate the relevance of the introduced dimensions. In doing so, the germane privacy concerns that arise with the ESN usage will be identified and hence, will be included in the established research model. Thus, it will be possible to measure the influence of the respective privacy concerns on the behavioral intention of the ESN usage. As a result, the privacy concerns perceived surveillance, perceived intrusion and secondary use of personal information (MUIPC), prior privacy experience and the awareness of privacy practices (IUIPC) are classified as relevant in the context of ESNs. This is especially due to the fact that some of the mentioned dimensions intersect each other in some instances. Regarding this, especially the MUIPC dimensions seem to be of importance in the context of ESN usage. Therefore, the MUIPC is the latest instrument and seem to be more suitable to capture the powerful technical opportunities of ESNs. In particular, the collection, sharing and storing of personal information of their users by means of the ability of mobile technologies to track and profile its users (Xu et al., 2012). Additionally, the MUIPC dimensions are based on the CFIP and IUIPC and hence, include and further develop most of their approaches concerning privacy concerns (Xu et al., 2012; Malhotra et al., 2004; Smith et al., 1996). However, there is one dimension that do not seem to be fully covered by the MUIPC dimensions but is also relevant in the context of ESNs. This dimension awareness of privacy practices (IUIPC) (Malhotra et al., 2004). Based on the initial assessment, the MUIPC certainly misses to capture the awareness of ESN users concerning conducted privacy practices. Especially, because

the awareness of privacy practices constitute a passive user dimension of information privacy, whereas dimensions such as control are characterized by its active nature, e.g. active approval. Regarding this, the awareness of users could lead to a weakening of privacy concerns towards the ESN usage. Regarding this matter, the respective privacy concern will be discussed in greater detail and in doing so the question of why these concerns are essential for the ESN usage will be addressed in particular. For the purpose of this study, privacy concerns will be defined as the degree to which a user believes using an ESN would result in a loss, reduction, or violation of the following privacy dimensions:

Perceived Surveillance (MUIPC) The first relevant privacy concern in the ESN context is the perceived surveillance developed in the course of the MUIPC by Xu et al. (2012). Referring to its predecessor models, the perceived surveillance further developed the collection dimensions of the IUIPC and CFIP to the mobile context. The authors state that the collection dimension – that refers to the individuals' concerns about the degree of personal information collected by others (Malhotra et al., 2004) – is insufficient in representing the rapid advancements concerning data collection that walks along with mobile technologies. Therefore, mobile apps are related to aggressive data collection activities that could create the impression that providers are able to monitor user behavior through their devices and applications (Xu et al., 2012). Consequently, surveillance can be extended and defined as "the watching, listening to, or recording of an individual's activities" (Solove, 2006). These characteristics can also be applied to the ESN context as organization are institutionalized agents with a need to control goal achievement (Selznick, 1996). ESNs are not only frequently connected via smartphones and also implemented as applications, but oftentimes use similar functions to mobile devices. ESNs normally involve the usage of various functions such as

web browsers, emails and chats, wikis and blogs or photos, calendars and even contact lists that demand and contain a variety of personal information of its users (Leonardi et al., 2013; Xu et al., 2012). Due to the fact that these information are usually necessary to use the respective application properly, ESNs are able to collect and store much more personal information of users, than previous Intranet solutions and outside of strict policy regulated HR applications. Due to modern technologies that are employed in ESNs, an enormous amount of information can easily be stored and processed and analyzed very fast (Lom et al., 2016). Consequently, information such as working times, upcoming schedules, the personal identity and sometimes the real-time location can be identified and monitored via ESNs. External, as well as internal beneficiaries can take advantage of the efficient surveillance capabilities to track and record ESN users and their personal information (Leonardi et al., 2013). This issue is intensified by the often occurring lack of transparency concerning data collection, which could lead to worries about the misuse of the collected information (Lom et al., 2016). Therefore, there will be the possibility that employees avoid the ESN usage for the concern that their activities and information will be observed, stored and transmitted to third parties. Thus, the perceived surveillance represents an important privacy concern in the course of the ESN usage and its influence of behavioral intentions.

Perceived Intrusion (MUIPC) The next privacy concern that needs to be considered for the ESN usage is the perceived intrusion. This dimension is part of the MUIPC and also takes up the approaches of the CFIP and IUIPC. Similar to the above-mentioned perceived surveillance, this dimension further develop and extend them into a mobile context. More precisely, perceived intrusion is especially rooted from the dimension of improper access and error (CFIP) and the dimension of control (IUIPC). According to Xu et al. (2012) the previous dimensions are inadequate to capture the powerful threats and possibilities of intervention that are accompanied with modern technologies such

as mobile devices. The term intrusion is oftentimes connected to the concept of personal space. Accordingly, mobile devices provide a platform to disturb this personal space of the users and therefore gain access to their personal information (Xu et al., 2012). The authors state that especially the consistent connection to the Internet and the various interfaces entail major risks for the mobile apps. One of the growing problems for mobile devices to disturb the personal space of their users are malware, which can easily be trapped by downloading malicious apps (Lom et al., 2016; Xu et al., 2012). Furthermore, these invasive acts could lead to the disturbance of the individuals' solitude and are accompanied with the unauthorized intervention of the attendance of others. Hence, intrusion is said to interrupt the individuals' activities and practices, as well as to make him/her feel uneasy (Solove, 2006). These characteristics can also be deployed for interventions in the context of ESNs. As mentioned above, organizations also need to deal with malware like viruses, worms and Trojans in their organizations that try to intervene in the personal space of their employees. Due to the fact that these potential threats can oftentimes work unnoticed, data collection could take on great magnitudes. In particular, perceived intrusion refers to a third party monitoring the personal information and details of ESN users that could make them feel observed and insecure (Lom et al., 2016). ESNs that are affected by malware could enable access to personal, as well as corporate information to their developers. These include access to e.g., profiles, contacts, phone numbers, locations and also files and emails. Concerning this, not only is the theft, but also the arbitrary change of personal information, of importance (Xu et al., 2012). Consequently, individuals could avoid the ESN usage for the concern that malicious activities may intervene their practices through unauthorized presence. However, it is suggested that the perceived intrusion is a relevant privacy concern in the context of ESNs and influences the behavioral intention of its users.

Secondary Use of Personal Information (MUIPC) The last privacy concern that was introduced by Xu et al. (2012) in the course of the MUIPC is the secondary use of personal information. This dimension originated in the eponymous dimension of the CFIP developed by Smith et al. (1996). According to the authors, the secondary use of personal information defines the concern that information is requested for one purpose, but is inappropriately used for another purpose without the authorization of the queried individual (Smith et al., 1996). This concern is considered as important as the presence of secondary use of personal information by an organization can potentially influence an individuals' willingness to share personal information, which in turn could harm the organizations interactions with consumers, or stakeholders (Culnan & Williams, 2009). According to Xu et al. (2012), in the broad sense secondary use stands for the coordination of linkage rules which manage who may have additional grasp to the held information. The setup of a new linkage means that an additional entity has been allowed access to the personal information and hence, has become a co-owner. The information privacy concern occurs when a linkage arises that the user is not aware of or is implemented without his/her authorization (Xu et al., 2012). The secondary use of personal information is therefore considered to potentially create a concern and uncertainty about the further processing of the collected information and lets the users feel helplessness and vulnerable (Solove, 2006). In the context of ESNs, the unauthorized secondary use of personal information is particularly important. ESNs are normally implemented for company-wide communication (Leonardi et al., 2013). Thus, the individual user is not able to overlook the entirety of people who are able to access the ESN. Furthermore, breached linkages can also occur when the company that uses the ESN itself share the collected personal information to unauthorized entities or even use them for secondary purposes without the users knowing about it (Xu et al., 2012). This fact is intensified if the ESN is provided by or stored in cloud-storages of third-

party providers. This will make it almost impossible for the individual user to keep track of their personal information. Therefore, the secondary use of personal information is considered as a key dimension to characterize privacy concerns connected with the ESN usage.

Prior Privacy Experience The dimension of prior privacy experiences was initially established as a causal variable, by Smith et al. (1996) in the CFIP model. The authors define the assumption that individuals would have stronger concerns regarding information privacy when they had been exposed to, or had been the victim of personal information misuses and frauds (Smith et al., 1996). However, Smith et al. (1996) do not classify prior privacy experiences as a concern, but rather as an individual characteristic and a trigger for the emergence of privacy concerns. Some following studies, such as (Okazaki et al., 2009; Stewart & Segars, 2002; Xu et al., 2012) adopted this approach and place the information privacy concerns between predictor variables (e.g. prior privacy experience) and outcome variable (e.g. behavioral intentions) (Xu et al., 2012). Prior experiences can also be classified as a privacy concern, as employees would perceive the concern that their organization utilizes the ESN application in the same way public SN organizations do including the privacy and security treatment. Consequently, differing from the other studies, the underlying research model will subsequently treat prior privacy experiences as an individuals' privacy concern. Generally, it can be suggested that prior negative experiences with the respective technology encourages users to avoid the usage. Similarly, ESN users' experience with personal information disclosure can be either positive or negative. Therefore, the failure of ESN application to meet the users' expectations causes negative experiences. Even though, ESN users have had mostly positive experiences with the respective network, a single incident could trigger strong negative experiences and thus, intensify users' privacy concerns (Okazaki et al., 2009). Although such incidents are not yet well known

in research and practice, the perception of the users may differ. This issue is also intensified due to the fact that SNs in enterprises are frequently compared and referred to public SNs. The public counterparts in turn, have a relatively low level of transparency concerning the processing and storage of the collected personal information. Therefore, this lack of security and clarification are often discussed as medial. As a result, users' negative experiences with public SNs could be transferred to the usage of corporate tools regardless of the organizational trust level and result in a clear delineation that could be difficult for all users. Therefore, external negative privacy experiences could also be assigned internally. In all cases, such experiences can generate an episodic memory, which induces specific emotions and thus, increases information privacy concerns (Okazaki et al., 2009). Therefore, the prior privacy experience represents an important privacy concern in the course of the ESN usage and its influence on behavioral intentions. Wherefore, the dimension will be included in the underlying research model.

Awareness (of Privacy Practices) (IUIPC) The last privacy concern that needs to be discussed is the awareness of privacy practices which were introduced by Malhotra et al. (2004) in their IUIPC instrument. The authors define the awareness of privacy practices as a passive user dimension of information privacy that is measured by the degree to which an individual is concerned about his/her awareness of information privacy practices conducted by the respective organization (Malhotra et al., 2004). According to the authors, the aspect of awareness is rooted in the Social Contract theory and includes two different types of justice, namely interactional and informational justice. Interactional justice takes on the issues of transparency and suitability of information and leads to a reduced perception of fairness if violated. In contrast, informational justice refers to the disclosure of information and leads to a rising perception of fairness if the request is explained appropriately (Malhotra et al., 2004; Okazaki et al.,

2009). According to Dinev and Hart (2006), individuals with a distinctive awareness to privacy will generally be responsive to privacy issues. Certainly, the dimension awareness of privacy practices is defined as a passive component of user concerns. In contrast to its more active counterparts such as perceived intrusion and surveillance, awareness defines to what extent the user is concerned about corporate privacy practices and less about the actual implementation (Malhotra et al., 2004). Consequently, when dealing with privacy practices of ESNs, not only the present security software against external threats needs to be taken into account, but also the setup of individual privacy rights and a comprehensive privacy policy. As a result, this dimension focuses more on the transparency and the individual-specific decision making (Jiang, 2011; Malhotra et al., 2004). In this matter, ESNs and the respective organizations could release news reports about the information disclosure or security aspects to improve the awareness and decrease the users' concerns about privacy. Furthermore, users could be allowed to set their own individual privacy rights and specify which information can be viewed by different business units (Jiang, 2011). However, the limitation of transparency would work against major benefits of ESNs, such as a comprehensive knowledge exchange and an advanced accessibility of employees (Leonardi et al., 2013). The awareness of privacy practices is also an important factor for ESN users. Organizations that collect personal information about their employees should provide information about the way the data is gathered and processed, as well as about the purposes for which the data is used. A transparent handling of security aspects and an easy access to plain privacy policies are initial steps for organizations to avoid these concerns (Jiang, 2011). Otherwise, the missing perception of corporate privacy practices when dealing with personal information could result in the situation that users avoid using ESNs entirely. Consequently, the awareness of privacy practices is also considered a relevant privacy concern in the course of ESNs.

3. Hypothesis Generation and Research Model

When a user releases personal information to an ESN, an exchange relationship in the context of information privacy is triggered, which strongly depends on beliefs and perceptions regarding the respective network. It is therefore important for the implementing organizations to understand how an individual decides to get involved in this relationship. The respective organizations, as well as potential ESN providers have great interest in predicting users' responses to requests for personal information. In this regard, it is suggested that users' perceptions such as trust and risk concerning the respective technology are antecedents and may be able to mediate the relationship between privacy concerns and the ESN use intention. In this matter, the underlying research model is developed to measure the influences of users' privacy concerns on the behavioral intention to use ESNs. The research model represented in Figure 1 generally consists of two major parts: the perceived privacy concerns, and the intended ESN user behavior (cf. Figure 1).

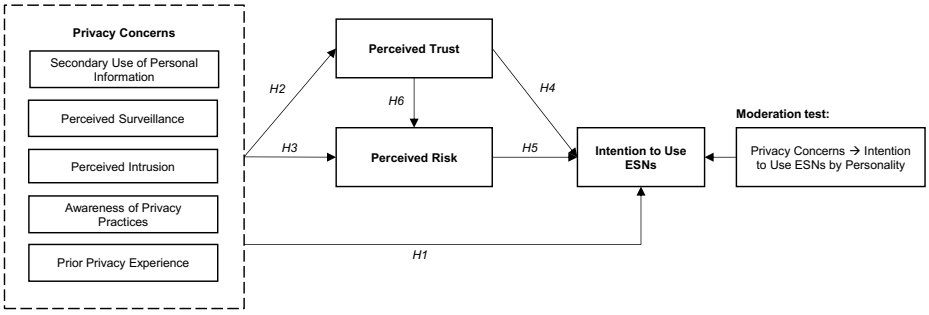

Figure 1 Operational Model of Hypotheses

As mentioned by Junglas et al. (2008) "as far back as privacy has been a concern for the individual, it has been associated with technology". The perceived privacy concerns represent an individuals' generalized concerns about how organizations collect, store,

and use personal information, represented by the five dimensions previously identified. These concerns become striking when implementing ESNs and may affect the users' intention to use such network. Numerous studies have handled the construct of privacy concerns as an antecedent to different behavior related aspects, e.g., the willingness to disclose personal information and intention to transact. Therefore, the negative impact of privacy concerns on behavioral intentions has been empirically supported in various technological areas (Xu & Gupta, 2009; Korzaan & Boswell, 2008; Lom et al., 2016; Yang & Wang, 2009; Sipior et al., 2013). Regarding this, one common way to do this is the consideration of the TAM, which defines the intention to use as the instrument to measure the acceptance of technologies by users. Therefore, the intention to use is described as the level on an individual's intention to use the examined technology (Davis et al., 1989). In this matter, it can be argued that an individual who perceives a high level of privacy concerns while using the respective technology would take proactive steps to decrease the probability of having their privacy invaded (Korzaan & Boswell, 2008). In the context of ESNs, this issue could lead to steps for employees, such as removing themselves from email lists, not providing personal information, or refusing to use the ESN completely (Korzaan & Boswell, 2008). Hence, the users' perceived privacy concerns while using ESNs could influence the willingness to provide personal information and thus, could directly decrease the intention to use the ESN in general (Buettner 2015; Greeven and Williams 2017; Osch et al. 2015). Taking this under consideration, it can be hypothesized that:

H1: Privacy concerns will have a negative influence on the intention to use ESNs.

When considering privacy concerns in the context of behavioral intentions towards a technology, trust and risk are important beliefs in information privacy (Guo et al., 2020). As mentioned by Dinev et al. (2013) studies on privacy perception should also examine

trust. In a situation where potential risks exist, trust also plays a decisive role in specifying the behavior of an individual. This, so-called trust-risk model has already been subject to studies that examine the behavior in an uncertain environment, such as the employee-organization relationship and is also part of the IUIPC (Malhotra et al., 2004). As shown in Figure 1, this study includes the perceived trust and perceived risk in the research model to explain an individuals' release of personal information upon request of an ESN. In this matter, perceived trust is defined as the degree to which an individual believes that a company, or rather another provider, is dependable and able to protect the users' personal information. Guo et al. (2020, p.8) already stated that "the significance of trust vis-à-vis privacy stems from the fact that many service providers initially focused on justifying the return on investment, while issues, such as privacy protection, did not draw the same level of attention". In turn, perceived risk refers to the belief that the release of personal information to the respective company walks along with a high potential of loss (van Slyke et al., 2006). The current literature suggests that the perceived trust and risk towards a technology are influenced by an individual's personal characteristics, such as the tendency to have a concern for information privacy. Consequently, this will lead to the situation that the privacy concerns will influence how the user perceives a specific situation where a network requests personal information (Malhotra et al., 2004). The relationship between privacy concerns and the perception of risk and trust has been well studied for different technologies and application environments (Pavlou, 2001; van Slyke et al., 2006; Okazaki et al., 2009; Malhotra et al., 2004; Junglas et al., 2008). The impact of privacy concerns on trust and risk in an exchange relationship should also be applicable in the ESN context. Regarding this, the perceived trust would be defined as the willingness of an ESN user to be vulnerable to the actions of an ESN provider based on the expectations

that the ESN provider will perform particular actions important to the ESN user, irrespective of the ability to control or monitor the ESN provider. Whereas, the perceived risk can be characterized as an ESN users' belief about the likelihood of gains and losses of personal information outside the consideration that involve the relationship with the particular ESN provider (Malhotra et al., 2004; Pavlou, 2001). More specifically, ESN users with a high degree of privacy concerns are likely to have a low perception of trust and in turn, a high perception of risk regarding the revelation of personal information to the respective network. Thus, it is hypothesized that:

H2: Privacy concerns will have a negative influence on the perceived trust.

H3: Privacy concerns will have a positive influence on the perceived risk.

Building on the assumption that users' information privacy concerns could influence his/her risk and trust perceptions in the course of the respective technology, it can be assumed that the altered risk and trust in turn would also have an influence on the intention to use ESNs. According to the literature that deals with the risk-trust relationship, the perceived risk and trust are expected to have a significant effect on behavioral intentions (Malhotra et al., 2004). Furthermore, trust is a serious issue in SN usage (Gambi, 2009; Maheswaran et al., 2007). It is therefore timely and appropriate to consider whether trust in ESNs influences the disclosure of personal information and its intended use. If trust is particularly important for the process of social interaction, it is important to ask what can be done to promote trust (Shin, 2010). In particular, trust and risk are strong in determining behavioral intentions before actual interactions take place. A specific degree of trust and risk is needed in any private and corporate interaction. However, it becomes especially important when the parties involved have little familiarity and acquaintance with each other and is further intensified due to requests

for information that are worth protecting (Gefen et al., 2003). Trust and risk are critical aspects of ESNs because of the potentially opportunistic behaviors that have occupied the confidence in these networks. Therefore, trust in an ESN occurs through the belief that there are safety mechanisms set up into the ESN to protect personal information (Sledgianowski & Kulviwat, 2008). In the context of ESNs, it can also be suggested that one of the main reasons why employees do not engage in the communication and collaboration via ESNs is that they do not have trust in ESN providers or belief that the usage of such a network is accompanied with high risks for their private information. This is of particular importance when new employees come into the company and do not have experience with the privacy proceedings, when the respective company does not take any steps concerning the education and awareness for the respective employee, or when ESNs are provided by external third parties (Li et al., 2008). A trusting relationship is not ensured from the beginning, especially due to the fact that ESNs collect and process private information of their users. Hence, this could influence the users' intention to use the respective ESN. Therefore, trusting and risk perceptions in the course of ESNs are likely to have a direct influence on the intention to use. Hence, it is hypothesized that:

H4: Perceived trust will have a positive influence on the intention to use ESNs.

H5: Perceived risk will have a negative influence on the intention to use ESNs.

The analyzed literature suggest that the perceived trust could also directly influence the perceived risk. Concerning this, it can be argued that the perceived trust could decrease the uncertainty and the vulnerability accompanied with technology usage (Malhotra et al., 2004). Once built up, trust can play a decisive role, such that high levels of perceived trust can reduce the perception of respective risks. Users who trust an ESN provider (employer or third-party provider) are less likely to foresee negative

consequences of contacting the provider, as well as to dispose personal information. However, when the perceived risk is higher, trust evolves to an even more relevant factor of risk taking behavior [88]. More precisely, it can be assumed that the perceived trust is expected to mitigate the perceived risks that are accompanied with the ESN usage (Pavlou, 2001). This would mean that the more trust an ESN user has in the ESN, the less likely he or she is to anticipate the risk in the disposal of personal information to the ESN (Malhotra et al., 2004). Consequently, it can also be expected that:

H6: Perceived trust will have a negative influence on the perceived risk.

Although the focus of the current study is on the relationship between privacy concerns and the ESNs intended usage, we also take the moderating role of personality traits into account because personality is considered as an important factor that affects media use gratifications and motivations (Kircaburun et al., 2018). Individual differences, which have a distinguished and long history in social and personality research play an omnipresent role in the IS domain and researchers have incorporated personality-related and cognitive variables into various research models and research contexts (e.g., Adamopoulos et al., 2018; Barnett et al., 2015; Junglas et al., 2008; Nguyen et al., 2018; Ong & Lin, 2018; Salgado, 2003; Uffen et al., 2012). For example, in our research context it seems possible that people desire privacy because they are generally more shy or withdrawn. Therefore, it is advisable to consider the moderating influence of the personality. Personality traits are specified as dimensions that are able to show individual differences and patterns of thoughts, feelings and actions. In research, classification systems are used that summarize individual differences in personality into fundamental facets of each human being. To provide a robust model, we therefore considered the most frequently used personality traits in psychology research and used them as moderators. In our study, we used the Big Five Inventory-SOEP (BFI-S)

by Gerlitz & Schupp (2005). Research has investigated the relationship between people's personality traits and social media use (e.g., Blackwell et al., 2017; Correa et al., 2010; Gerson et al., 2016; Kim et al., 2013; Kircaburun et al., 2018; Seidman, 2013). However, this research centers on public social media networks rather than on ESNs. We thus introduce each of the five personality traits without taking a definite stand regarding their predicted direction and briefly explain how they might be related to the intention to use social media networks in an organizational context (ESN). The first dimension is titled extraversion and captures a person's efforts handling their social environment. McCrae and Costa (2003) use terms like cheerful, energetic, sociable and dominant to describe this dimension. Agreeableness is a personality traits that includes an individual's tendency to endeavor for harmony and a high degree of trust in others, and vice versa. Agreeableness measures characteristics such as altruism, sympathetic, selfless, caring, straightforward, and emotional support (McCrae & Costa, 2003). Neuroticism reflects the tendency of an individual to worry, to be depressive as well as frustrated and to be concerned about negative influences (James et al., 2017). McCrae and Costa (2003) describe neuroticism with terms like nervous, high strung and tense. Conscientiousness refers to how strong someone feels obliged to their respective tasks and objectives and measures the extent to which an individual is rational, logical, competent, well organized and informed (James et al., 2017; McCrae & Costa, 2003). Finally, openness refers to the mental mobility, creativity and curiosity – intellectual ambitions. Individuals who are open to experiences have widely spread interests and are fascinated of news and innovations (McCrae & John, 1992).

4. Research Method

4.1. Research Design and Data Collection

Given our research goals and the study level of the research model, we chose to use a cross-sectional anonymous self-reported survey to collect empirical data and multivariate analysis methods (PLS-SEM) to test the revised model statistically, which is strongly accepted in literature (Lowry et al., 2016). Therefore, data sets from different participants based on a survey were used to test the research model. Quantitative methods such as surveys are particularly suitable to examine the individuals' behavior. This study focuses on individuals that have the possibility to use ESNs in their daily work, especially employees of organizations that have already comprehensively implemented such network. For the final study we used a simple random sample in order to provide unbiased random selection of employees. Due to that, respective organizations needed to be contacted to recruit an appropriate amount of employees. Therefore, potential organizations were identified and respective department heads were contacted via email and were asked to spread the survey. Our survey package consisted of a cover letter that states the objective and the purpose of the study as well as the data handling procedure and the survey questionnaire. Due to the critical information being shared in the survey, participants were informed that their participation was voluntary and anonymity was guaranteed. The first question of the online survey eliminated participants who were unemployed. These restriction concerning the target group allowed us to accurately measure the proposed hypotheses. To ensure that all participants use or at least are able to use ESNs, we used a filter question concerning the possibility to use ESNs at the beginning of the survey. Correspondingly, respective answers were also excluded from the data set. However, none of the participants stated that an ESN usage was not possible for them, so that no further exclusions were needed. From an initial sampling frame of 154 participants, we screened out 30 responses with mostly missing values. This left us with 124 usable responses for an overall response rate of 80.52 %. A summary of the demographic characteristics of

respondents (age, gender, profession, education, and branch of industry) is provided in Table 1.

Table 1 Sample demographic information

Gender	Age distribution	Profession	Education	Branch
Female 53	≤ 20 yrs. 3	Intern 6	Undergraduate / Bachelor`s degree 44	Health Care 9
Male 71	21-30 yrs. 74	Student 24	Master`s degree 21	Financial System 10
	31-40 yrs. 16	Apprentices 2	Diploma 24	Craft 2
	41-50 yrs. 17	Temporary Staff 1	Exam 6	Industry 48
	> 50 yrs. 14	Employee 64	Doctorate degree 3	Administration 8
		Executive Employee 19	No Degree 26	IT 32
		Manager 6		Manufacturing 6
		Managing Director 1		Other 9
		Other 1		

All constructs were measured using five-point Likert scales. However, the constructs feature different scale statements. The privacy concern constructs, the behavioral intention, risk, and trust constructs were measured using a 5-point Likert scale, which ranged from “strongly disagree” to “strongly agree”, except for the construct of prior privacy experience, which was measured using a 5-point rating scale, which ranged

from “never” to “frequently”. The personality traits constructs were measured with multiple items using a 5-point rating scale, which ranged from “does not apply to me at all” to “applies to me perfectly”.

Because the data were self-reported, several approaches were used to prevent common method variance (CMV) *ex ante* in the research design stage and *ex post* after the research has been conducted. The most critical point of CMV is that if it exists, it could bias the estimates of the relationship among the theoretical constructs. Our ex ante approach included e.g., a careful wording based on existing scales, presenting the survey items in a randomized fashion, and guarantee anonymity and confidentiality (Chang et al., 2010, Podsakoff et al., 2003). Our steps ex post included the examination of the correlation matrix to determine if any of the correlations were above 0.90 (Pavlou et al., 2007) and assessing the VIFs as described by Kock (2015). The observed correlation are significantly below the mentioned threshold. Also, the VIF values did not show a value higher than 3.3 (Kock, 2015; Pavlou et al., 2007).

4.2. Operationalization of Variables and Measurement

As mentioned before, in the course of the quantitative research, the respective constructs of our research model are operationalized through definitions of the constructs using pre-validated measures. When no existing scale was available for a given construct, items were adapted from the most related scale and were carefully adapted to the ESN context to fit the specific research context. Online Appendix A provides the full details of items and questions. Privacy concerns was conceptualized as being a function of secondary use of personal information (SUSE), perceived surveillance (SURV), perceived intrusion (INTR), awareness of privacy practices (AWAR), and prior privacy experience (PEXP). These sub-dimensions, which are viewed as defining attributes of the focal construct, were measured using 10 indicators (MacKenzie et al.,

2011). To measure the personality traits, the BFI-S was utilized (Gerlitz & Schupp, 2005). The BFI-S is a well-established instrument and has been used in field research and in laboratory research, a variety of settings and a broad range of sample population; it was used without modification in our study. Due to the high number of items of other instruments, in this study we deliberately decided not to use an even more extensive measurement instrument like, e.g., the NEO-PI-R or the NEO-FFI (Costa & McCrae, 1992). Such large scales are not very suitable for multi-theme surveys as in our case (Costa & McCrae, 1992). The constructs of perceived trust, perceived risk, and intention to use ESNs were multi-item scales drawn from previous validated measures. The constructs perceived risk and perceived trust were measured using four items partly adapted from Malhotra et al. (2004), while the behavioral intention to use ESNs were measured using four items based on research by Davis (1989).

After examining the relationship between each indicator and the construct in the proposed research model, we determined the overall constructs to be reflective, because of the interchangeability of the indicators, the covariation among the indicators, the direction of the causality, and the nomological net of the constructs, which should not differ (Petter et al., 2007). The construct privacy concerns is modelled as hierarchical component models of type reflective-formative (Cadogan & Lee, 2013; Becker et al., 2012). In the reflective-formative type models, the lower-order constructs are reflectively measured constructs that do not share a common cause, but rather form a general concept that fully mediates the influence on subsequent endogenous variables (Becker et al., 2012). This higher order abstraction is justified by the fact that if all items are bundled together, the explication of the resultant construct is incomplete (Gerbing et al., 1994) and the contribution of various content domains to the final scale score will not be known (Koufteros et al., 2009). By enabling the collection of complex con-

cepts in comparatively simple abstractions, multidimensional constructs such as second-order constructs provide opportunities to advance research (Polites et al., 2012) and increase the realism in empirical models (Edwards, 2001).

4.3. Data Analysis and Results

SmartPLS (v. 3.2.9) was used for partial least squares structural equation modelling (PLS-SEM) for model validation and hypotheses testing. PLS-SEM whose use has increased exponentially in a variance of research disciplines e.g. information systems research (van Riel et al., 2017; Henseler et al., 2015; Ringle et al., 2012; D'Arcy et al., 2009), strategic management (Hair et al., 2012), operations management (Peng & Lai, 2012), accounting (Lee et al., 2011) as well as group and organization research (Sosik et al., 2009), has several advantages in many situations – e.g., when sample sizes are small or when complex models with many model relationships and indicators are estimated (Hair et al., 2017; Wetzels et al., 2009). Furthermore, PLS-SEM does not impose any distributional assumptions, e.g. normality requirements on the data, and allows simultaneous testing of the measurement model and the estimation of the structural model (Xu et al., 2014; D'Arcy et al., 2009). In contrast to covariance based approaches, the evaluation of the measurement and structural model results in PLS-SEM builds on a set of nonparametric evaluation criteria (Hair et al., 2017). Model testing and measurement validation were conducted using a two-step approach (Ringle et al., 2015). The two-step approach involves separate assessments of the structural model and the measurement models (Hair et al., 2017). For the latent construct privacy concerns that is of reflective-formative type we used the repeated indicator approach (Ringle et al., 2012; Lowry & Gaskin, 2014). The advantage of the repeated indicator approach is that it takes the whole nomological network, not only the higher level or lower

level model into account. This is due to its ability to estimate all constructs simultaneously instead of estimating all dimensions separately (Becker et al., 2012).

Before testing hypotheses, we evaluated the reliability and validity of the construct measures. First, we check for reliability because reliability is a necessary condition for validity. To ensure indicator reliability, we examined the loadings of each indicator to their respective underlying construct. Acceptable indicator loadings are recommended to be above the threshold of 0.70, indicating that at least 50 percent of the variance is shared with the respective construct (Chin, 1998). All outer loadings of the reflective constructs are well above the threshold mentioned above. The indicator SURV2 has the smallest indicator reliability with a value of 0.67 (0.817^2), while the indicator SUSE1 and SUSE2 have the highest indicator reliability with a value of 0.91 (0.956^2) (Table 2). The composite reliability (internal consistency reliability-ICR) measures its internal consistence, except that the latter presumes, *a priori*, that each indicator of a construct contributes equally (Chin, 1998; Fornell & Larcker, 1981). Fornell & Lacker (1981) argued that their measure is superior to Cronbach's alpha because it uses the actual item loadings obtained within the nomological network to calculate internal consistency reliability. ICR should be 0.70 or higher (Diamantopoulos et al., 2008). The values for all reflective constructs are above the threshold (Table 2). Convergent validity was assessed by the average variance extracted (AVE) value as the evaluation criterion. The AVE values for all reflective constructs are well above the required minimum level of 0.50. Thus, the measures of the reflective constructs have high levels of convergent validity (Table 2).

Next, we checked for discriminant validity. Discriminant validity is the degree to which measures of diverse constructs are distinct (Campbell & Fiske, 1959; Henseler et al., 2015). If discriminant validity is not established, "constructs have an influence on the

variation of more than just the observed variables to which they are theoretically related" and thus, "researchers cannot be certain results confirming hypothesized structural paths are real or whether they are a result of statistical discrepancies" (Farrell, 2010, p. 324). Different approaches are available for evaluating discriminant validity, e.g., the Fornell-Larcker criterion and the examination of cross-loadings. In our study we use a new alternative approach by Henseler et al. (2015), because traditional criteria do not reliable identify discriminant validity issues. They propose an approach, to accessing discriminant validity that is based on the multitrait-multimethod matrix, called the heterotrait-monotrait ratio of correlations (HTMT). HTMT is the average of the heterotrait-heteromethod correlations relative to the average of the monotrait-heteromethod correlations (Henseler et al., 2015). The HTMT is an estimate of the correlation between two constructs. Therefore, if the indicators of two constructs exhibit an HTMT value that is smaller than one, the correlation between these constructs is most likely different from one, and they should differ (Henseler et al., 2015). The threshold level of the HTMT should be 0.90 (Teo et al., 2008). In our model the values for all constructs except the second-order constructs range from 0.082 to 0.836. We can conclude that discriminant validity has been established. Within second-order construct, all the lower constructs are assumed to belong to one overarching concept. Hence, discriminant validity is not necessarily a requirement within a second-order construct. Table 2 summarizes the results of the reflective measurement assessment.

Table 2 Validity and reliability details

Construct	**Items**	**Convergent Validity**	**Internal Consistency Reliability**	**Discriminant Validity**

		Loadings	**t-statistics**	**Indicator Reliability** (> 0.50)	**AVE** (> 0.50)	**Composite Reliability** (> 0.70)	**Cronbach`s Alpha** (> 0.60)	**HTMT (confidence interval does not include 1)**
Secondary use of personal information (SUSE)	SUSE1	0.956	68.745	0.914	0.914	0.955	0.906	Yes
	SUSE2	0.956	69.894	0.914				
Perceived Surveillance (SURV)	SURV1	0.891	75.172	0.794	0.731	0.844	0.636	Yes
	SURV2	0.817	19.060	0.667				
Perceived Intrusion (INTRU)	INTRU1	0.884	47.092	0.781	0.768	0.869	0.700	Yes
	INTRU2	0.869	34.557	0.755				
Awareness of privacy practices (AWARE)	AWAR1	0.912	11.078	0.832	0.790	0.883	0.737	Yes
	AWAR2	0.866	6.995	0.750				
Prior privacy experience (PEXP)	PEXP1	0.930	44.565	0.865	0.882	0.937	0.867	Yes
	PEXP2	0.948	80.160	0.899				
Perceived trust (TRUST)	TRUST1	0.936	70.638	0.876	0.865	0.928	0.844	Yes
	TRUST2	0.924	53.105	0.854				

Per-ceived risk (RISK)	RISK 1	0.950	87.122	0.903	0.899	0.947	0.888	Yes
	RISK 2	0.947	74.395	0.897				
Intention to use ESN (INT)	INT1	0.866	26.094	0.750	0.806	0.943	0.920	Yes
	INT2	0.933	63.231	0.870				
	INT3	0.917	46.744	0.841				
	INT4	0.875	32.405	0.766				

Since multicollinearity is a potential threat in PLS-SEM, it is obligatory to test for multi-collinearity. We therefore report the tolerance variance inflation factors (VIFs) for each indicator. A value of 5 and higher indicates a potential collinearity problem (Hair et al., 2017). In our study the highest VIF value was 4.397 (and most were below 3.0). Overall, the VIF scores on the indicator level ranged from (1.278 to 4.397), which is below the latest standards for reflective latent variables. We conclude that our model does not suffer from multicollinearity.

Figure 2 shows the PLS-SEM path coefficient estimates from the two-stage approach and their significance (applying a bootstrapping procedure with 5.000 replications) (Henseler et al., 2015). With this procedure, the analysis produced estimates of both the explained variance and path coefficients. As shown by the PLS results from the analysis of the structural model, most hypotheses were supported. Of the 6 hypotheses (H1 – H6), four were found to be significant.

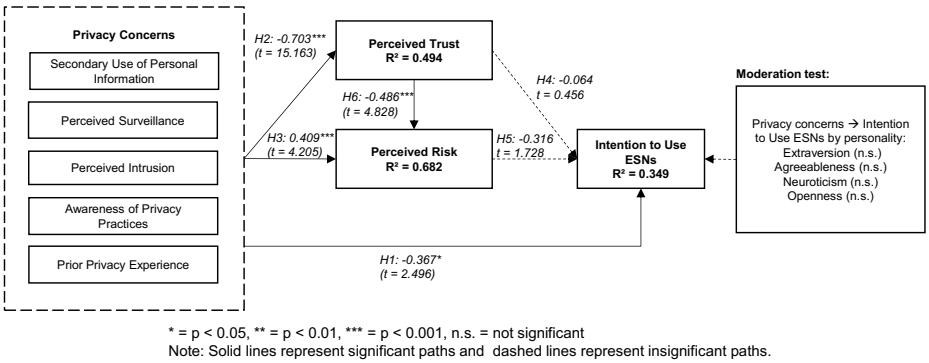

Figure 2 PLS Results for the Structural Model

The predecessor test criteria of this subsection examined the statistical significance of the observed model. However, it can be argued that not only the statistical significance is of importance, but also the practical significance. To further assess the robustness and quality of our results we address the effect size f^2. Besides the already mentioned path coefficients, the effect size measure f^2 constitutes another relevant measure for the relationship between exogenous on the endogenous variables. The effect sizes have the benefit that the measurement of the effect size allows a direct comparison of different quantities measured and that they are independent of the sample size (Selya et al., 2012). To evaluate whether the omitted exogenous constructs in our research model are meaningful and have a substantial impact on the endogenous constructs (cf. Table 3) we used the measure f^2 effect size as per Cohen (1988). Cohen (1988) states that $f^2 > 0.02$ ($f^2 > 0.15$, $f^2 > 0.35$) represents small (medium, large) effect sizes, respectively (Hair et al. 2017). However, small f^2 values do not inevitably indicate irrelevant effects, but can rather be consulted to clarify the practical importance of statistically significant outcomes (Degirmenci et al., 2013; Chin, 1998).

Table 3 Effect Size

Latent variable being explained (endogenous)	**Explanatory latent variable (exogenous)**	**f^2**
Perceived Trust	Privacy Concerns	0.977
Perceived Risk	Privacy Concerns	0.266
	Perceived Trust	0.375
Intention to Use ESNs	Perceived Trust	0.023
	Perceived Risk	0.049
	Privacy Concerns	0.083
Note: Cohen's f^2-statistics = $[R^2_{incl.} - R^2_{excl.}] / [1-R^2_{incl.}]$ (1988).		

Checking for Mediation and Moderation

Building on the above-mentioned assumptions, the research model implies that the impact of users' information privacy concerns on behavioral intention to use ESNs might be partially mediated by trusting and risk perceptions. As mentioned by Baron and Kenny (1986) the evidence for mediation is strongest when there is no direct, but rather an indirect effect ("full mediation"). When there are both direct and indirect effects there is a "partial mediation" (Lowry & Gaskin, 2014). We thus tested for mediation effects of perceived trust and perceived risk in the relationship between the privacy concerns and the behavioral intention to use ESNs. The first finding was that the predicted direct relationship between privacy concerns and the intention to use ESNs did hold in the full model; yet, not all the predicted relationships between privacy concerns and the other constructs (perceived trust, perceived risk) did. This outcome informed us that the relationship between privacy concerns and ESN usage was not fully mediated by these constructs. But one possibility remained: (1) privacy concerns have a partially mediated relationship with the intention to use ESNs. To determine if this opportunity occurred in our model, we applied a multiple mediation test, including all mediators (trust and risk) simultaneously as suggested by Hair et al. (2017). First, we

tested the significance of the indirect effects: (1) privacy concerns via risk to the behavioral intention to use ESNs, and (2) privacy concerns via trust to the behavioral intention to use ESNs. After running the bootstrapping procedure and looking at the specific indirect effects, we find that both indirect effects are not significant since both of the 95% confidence intervals includes zero. For the completeness of our analysis we further checked the t-statistics and the p-values. The t-value of the specific indirect effect for the privacy concerns via risk to the behavioral intention to use ESN relationship is 1.6488 and for the privacy concerns via trust to the behavioral intention to use ESNs 0.4441, indicating a p-value of more than 0.11 (cf. Table D3). Our findings provide no empirical support for the mediating role of trust and risk in our research model for the indirect effects of (1) privacy concerns via risk to the behavioral intention to use ESNs, and (2) privacy concerns via trust to the behavioral intention to use ESNs. But, another important contribution is the discovery that trust is a partial mediator in our model for the indirect effects of privacy concerns via trust to risk.

We also tested for moderation of the significant relationship between privacy concerns and the behavioral intention to use ESNs by the Big Five personality traits (extraversion, agreeableness, neuroticism, and openness) using the two-stage approach (Chin et al., 2003). We choose this approach because the goal of our moderation test is to determine whether or not the personality traits (moderators) exerts a significant effect on the relationship between privacy concerns and the behavioral intention to use ESNs. Because of weak reliabilities in the indicators we were not able to test conscientiousness (cf. Appendix D). The results of our analysis are detailed in Appendix D for each interaction examined in our model, and show that none of the personality traits moderates the relationship between privacy concerns and the behavioral intention to use ESNs.

5. Discussion

There are some studies in research literature acknowledging the influence of privacy concerns on technology adoption behavior and use (Malhotra et al., 2004; Dinev and Hart, 2006; Van Slyke et al., 2006, Degirmenci et al., 2013, Choi and Land, 2016). As noted by Guo et al. (2020, p. 8), however, there is a strong demand for more studies of, e.g., privacy and trust constructs on social network service use intention. This is also underlined by the fact "that privacy should be regarded more as a class of multi-faceted interests than as a single, unambiguous concept, and its value may be discussed only once its context has also been specified" (Smith et al., 2011). Despite the importance of privacy concerns, no research that we are aware of has examined factors that precede privacy concern in the ESN field taking also trust and risk effects as well as personality traits under consideration. We presupposed that investigating the combination of privacy, trust and risk effects with an organizational lens focusing on ESNs, may lead to important theoretical and meaningful practical implications. Therefore, the goal of this study was to develop a groundwork model of privacy-based ESN acceptance to explain the factors contributing to the development of behavioral intention to use ESNs. As mentioned by Junglas et al. (2008) "as far back as privacy has been a concern for the individual, it has been associated with technology". The perceived privacy concerns represent an individuals' generalized concerns about how organizations collect, store, and use personal information. User privacy concerns were found to play an important role in our model. Based on the aforementioned analysis, from a substantive perspective, our results indicate that privacy concerns negatively affect the users' intention to use ESNs.

The outcome that privacy concerns are negatively correlated with trust (H2) is not surprising, and indeed supports prior findings.

A rejection of H4 and H5 can be explained by the organizational setting that ESN applications are embedded in. Previous research has shown that organizational trust has an impact on the use of technology, especially in the field of knowledge sharing tools to which ESN applications belong (Ribiere & Tuggle, 2005). The operationalization of trust as perceiving the organization as dependable and able to protect the users' personal information, aims on the employees' organizational ESN framing to act opportunistic with employee self-disclosed information. If the employees have a trustful relationship with their organization due to e.g., privacy and data protection policies, they might have in general privacy concerns, but not about how the organization will handle personal information within the IT artefact (Joinson et al., 2010; Lippert & Swiercz, 2005). It can be assumed that perceived trust and perceived risk impact on the intention to use might be sample related. Trust is influenced by the experience gained, the history of the software, the recommendations and the context (Khiabani et al., 2013). The experience of the individual is based on the perceived benefits or expenses that have been taken in the past. A person with whom the company or individual has been working for a long time, for example, experiences a higher level of trust than a person who has only just joined the company (Holtmanns & Yan, 2006). Another question relating the proposed H4 and H5 originates from type of information shared with the ESN and employees associated beliefs about the information and the resulting attitudes as proposed by Kolekofski & Heminger (2003). The diametric understanding of ownership versus stewardship in this context plays a central role. ESN utilization often relies on the stewardship phenomena, which proclaims that the users have common framing about the ESN benefit and therefore utilize it without organizational interference in that way (Huang et al., 2015). Specific privacy concerns in the internet era, are usually triggered when individuals are about to disclose sensitive information in specific

contexts (Lippert & Swiercz, 2007). If the stewardship state is supported by the organizational environment, privacy concerns negative impact on trust and risk would be subject by variables like the organizational culture or general prior information sharing experiences within the company (Kolekofski & Heminger, 2003; Li et al., 2008; Ribiere & Tuggle, 2005).

5.1. Theoretical and Managerial Implications

Our research deals with a substantial privacy problem at the organizational level and aimed to clarify how privacy concerns are linked to perceived trust, perceived risk, and the intention to use ESNs. The results of this study highlight several implications for researchers as well as for organizations and ESN service providers. Therefore, we subsequently discuss the different facets of our theoretical and practical contribution with regard to the before mentioned research question.

Our study contributes to theory by proposing a theoretical model that is the first to account for the influence of privacy on the intention to use ESNs taking into account personality traits and the mediating effects of perceived trust and perceived risk. This is of importance in the light of the fact that there are differing views in both literature and practice regarding the impact of personality traits on privacy concerns and their impact on the intended ESN user behavior. Addressing this is of particular interest in the information privacy context, since the information privacy behavior can have a significant and lasting influence on the company. Adequate privacy protection is therefore essential, among other factors already known, for implementing adequate ESN usage in organizations. Thus, we effectively utilized the relevant privacy dimensions in an ESN usage context under consideration of the FFM. Such an empirically grounded and theoretically informed understanding has been absent from existing research and practice discourses. We focused on the influence of the overall privacy concern construct

(hierarchical component models of type reflective-formative), but future work have to be done to tease out the individual contributions of the five underlying factors. Consistent with prior research in other research contexts, we find a significant relationship between privacy concerns and the intended behavior to use ESNs, whereas perceived trust and perceived risk did not directly influence the intended behavior to use ESNs.

Another important contribution is the discovery that our findings provide no empirical support for the mediating role of trust and risk in our research model for the indirect effects of privacy concerns via risk to the behavioral intention to use ESNs, and privacy concerns via trust to the behavioral intention to use ESNs. But, an important contribution is the discovery that trust is a partial mediator in our model for the indirect effects of privacy concerns via trust to risk. More specifically, trust represents a mechanism that underlies the relationship between privacy concerns and risk. The IS discipline has increasingly used mediation models to better understand potential causal mechanisms in theoretical models (e.g., James et al., 2017; Burton-Jones & Hubona, 2006). As models which includes mediation have the prospective to "identify fundamental processes underlying human behavior that are relevant across behaviors and contexts" [MacKinnon & Fairchild, 2009, p. 16]. To robustly test for mediation we used advanced bootstrapping techniques. The results are shown in Appendix D.

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From a practical perspective, the findings of this study have a number of implications for organizations. For organization the contribution of quality content in the ESNs is an important factor to sustain ESNs as legitimate collaboration and knowledge sharing channel next to established media channels (Nolte et al. 2019). Therefore, the usage of the ESNs and the disclosure of information in form of content by the users is a sustaining factors of ESN success. We showed that privacy concerns have an impact on

the intention to use of an ESN. Privacy concerns need to be address in connection to the organizational ESN information use. We can support the ESN research perspective that it is about educating the user and making him familiar with the intended ESN use benefit that the corporation wants to achieve (Nolte et al., 2017) and in course of educating employees also privacy concerns should be addressed. As Shin (2010) already mentioned in the SNS context, “providers should inform potential users that risk taking and privacy concerns are potentially relevant and important concerns” (Shin, p. 435). As public social media applications often have a bad privacy image our study has shown that prior experiences transpire also to familiar IS in the organizational context. We suggest that organizations need to address privacy related topics of such similar IS with a communication strategy to eliminate as much uncertainty of data use as possible. Policies and active communication of data usage reports can help to improve the trust and power relation perception of the employees’ when using computer mediated communication (Chory et al., 2016). In previous research it was noted that trust in also an effective strategy for mitigating privacy concerns (Smith et al., 2011). In the context of public social networks research has shown that users “who trust that the social network provider will not act opportunistically with the information they provide will be less concerned about their privacy when interacting with the social network” (Wilson et al., 2014, p. 7). Since we found in our study that an increase in trust leads to a reduction in perceived risk, companies should support confidence-building measures. In this context, previous research has proposed reputation as an antecedent of trust (Grazioli & Jarvenpaa, 2000; McKnight et al., 2002). Thus, we perceive reputation to be a potential credible signal of trustworthiness of organizations that would influence trust for ESN users.

However, employees with general privacy concerns might still be conflicted with such types of applications that enable massive data collection. This is in line with the findings

of Shin (2010) in a SNS context. Another implication from the discussion is the embeddedness of ESN applications in the organizational context. Organizations need to support the properties and features of such a workstyle changing IT artifacts. Organizations run the risk of a decoupling if they try to implement technologies that support open communication, failure tolerance, flat hierarchies and unstructured work achievement but fail to support or tolerate such behavior in the daily operations with an unsuitable organizational culture. From a socio-technical standpoint, the chance of an successful ESN implementation are significantly lower if the ESN technology is used as an artifact in an environment that is not ready for such a work communication and knowledge sharing chance (Bartis and Mitev, 2008).

6. Limitations and Suggestions for Future Research

While the underlying research provides insights of understanding the influences of users' privacy concerns on the intended ESN use, our investigation has several limitations that offer opportunities for future studies. Even though, the general user sample employed in this study increases the external validity and generalizability of the results, it may not be entirely representative of the user community in all aspects. The employee survey was mainly completed by participants who use ESNs regularly, or at least are already registered in such network. However, this may not include those employees avoiding the ESN usage, for instance, because of perceived privacy concerns. Although we argue that the identification of the influence of privacy concerns is highly related to the ESN usage, further research should test these assumptions. Furthermore, a desirable benefit of the chosen design of our study is the ability to isolate particular constructs of interest, however, a weakness of that research design is its inability to truly capture other dynamic processes concerning privacy concerns in the context of ESN usage within a complex organizational environment. Future research

should employ other methods in order to provide a triangulation with the presented findings. It is suggested that a survey and interview approach that targets additional factors (e.g., computer anxiety) which influences the ESN usage should be undertaken.

Siponen and Vance (2014) advocate the use of specific measures in order to reduce bias “respondents need to use their memory and imagination” in order to answer generic questions. There are two reasons for choosing generic measures for this study: first, as the survey was not limited to any branch or company, it was not possible to investigate a specific yet common and relevant issue. Second, we adopted the items from frequently and renowned cited sources in order to provide validity. Our nomological model can be further extended by investigating alternative factors (mediators or moderators) as mentioned before. The current model can benefit from adding such variables in future research.

Furthermore, the current body of knowledge for the intra-organizational use of ESN is driven by the primary user group needs of knowledge workers (Huang et al., 2015; Leonardi et al., 2013). However, to facilitate benefits, it is important that ESN is applied throughout the organization to capture user-generated content and expose the employees to that new organizational information (Chin et al., 2015). The employees’ intention to use ESN is assumed to be limited by their professional background, which is mainly related to the type of work they perform (Denyer et al., 2011). Extending ESN to other work fields (e.g., shop floor worker), but considering only the knowledge worker’s view, will neglect different user requirements (Giermindl et al., 2017). Therefore it might be interesting to analyze occupational group cultural differences in the privacy ESN context.

Further investigations are required to consider cultural differences because cultural environments are shown to influence technology usage (Quelle James Paper), including the use of different forms of social networks (e.g., Quelle James Paper). Organizational, national and group culture aspects are critical variables for user behavior that directly or indirectly influence IT usage (Leidner & Kayworth, 2006). Legal differences among countries, e.g., the General Data Protection Regulation in the European Union and the California Privacy Act in the USA, as well as different beliefs, basic assumptions or shared values within different cultural settings have a diverse impact on the influence of privacy concerns on ESN user behavior. Looking at China (a land with a strict government control and censorship) as an example, relevant differences become clear which, due to different cultural settings and different legal framework conditions, can lead to different results. Here, in the area of social media usage, the difference to other countries, such as the USA or Germany, becomes apparent and therefore requires further research (Guo et al., 2020). For example, Miltgen & Peyrat-Guillard (2014) showed in their study that there are significant cultural and generational differences in the importance of trust versus responsibility for personal data.

There are several approaches using existing tools to examine personality traits. In our study we cannot completely rule out the potential role of personality traits, even though most of these controls were not significant. To not overtax the participants, the underlying study used a comparatively short scale to measure personality traits, so that as many as possible participants could be generated. In this regard, larger scales such as NEO Five Factor Inventory (NEO-FFI), which contains 60 statements or questions, could enable an in-depth assessment of relationships between personality traits and perceived privacy concerns. We have deliberately avoided doing so since the use of the long instrument might cause unnecessary testing fatigue of the subjects. This is

also highlighted in a study by James et al. (2017) who links the partly insignificant results of their study with the length of the selected measurement scale.

7. Conclusions

In conclusion, ESNs have been represented as one of the most transformative and innovative technologies for organizations and in particular for their impact on communication and collaboration. Organizations are increasingly adopting ESNs in their business practices. Although recent studies mentioned e.g., people sensemaking and relationship building on an ESN, detecting personal vs. professional closeness using an ESN, and the use of ESNs for knowledge sharing, academic research do not properly consider the role and influence of privacy concerns on the intention to use ESNs. However, an impeding factor in the adoption and full integration and implementation of ESNs is due to users' concerns for information privacy. To shed light on this issue, we set forth to answer the question: How do users' concerns for information privacy influence the intention to use ESNs?

However, an impeding factor in the adoption and full integration and implementation of ESNs is due to users' concerns for information privacy. An insight of these concerns foster the development of preventative measures to inhibit them. The underlying study sought to explain how users' concerns for information privacy in ESNs influence their behavioural intentions, as well as to identify influential factors such as perceived trust, risk and usefulness regarding the respective network. In addition, the influences of different facets of an individuals' personality on the expression of privacy concerns were considered. Conclusively, this study carved out the most important users' concerns for information privacy having regard to theoretical and practical applicability of the ESN usage. Therefore, aspects such as the secondary use of personal information,

perceived surveillance and intrusion, awareness of privacy practices and the prior privacy experiences could be identified and adopted into the context of ESN usage. Additionally, the perceived trust, risk and usefulness as antecedents and the Big Five personality traits were examined and assessed. On the basis of this, a research model was established, which was verified in the course of an employee survey. Resulting from this, recommendations and solution approaches for future research and practice could be made. By evaluating and discussing the findings of the empirical analysis and comparing those with the preceding statements of expert interviewees, possible explanations for the observed influences could be identified. Regarding this, the underlying study provides evidence that users' concerns for information privacy affect their intention to use ESNs. However, rather than directly influencing the ESN use intention, the influence of privacy concerns is mediated by users' perception of trust, risk and usefulness. These antecedents show great influence in supporting the ESN use intention and are in turn, also affected by occurring privacy concerns. Furthermore, the study demonstrates that the influence of the Big Five personality traits on the perceived privacy concerns is only moderately existent. Only two of the five examined traits show statistically influences. In this regard, it can conclusively be noted that extensive security and privacy measures are already implemented by providers, in order to protect private and corporate information used in ESNs. Organizations, as well as providers take great care of the comprehensive evaluation of risks and threats and are aware of data privacy regulations and take respective precautions. However, the direct reference to the demand of the employees may be left out. Concerning this, organizations concentrate largely on the direct reduction of users' privacy concerns to support employee participation. Respective measures and precautions are actively implemented to mitigate such concerns. Such arrangements are important and mandatory, but may not lead to the necessary employee participation, as indicated by the findings of this

study. Therefore, it can be recommended that organizations, as well as providers should implement measures and raise awareness to foster trust and

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SUPPLEMENTARY APPENDIX - An Empirical Analysis of the Influence of Information Privacy Concerns on Enterprise Social Network Usage

APPENDIX A. MEASUREMENT ITEMS

Table A.1 Measurement Item Details and Sources

Construct	Construct indicator	Item	Construct Source
Secondary Use of Personal Information (SUSE)	n/a	**Prompt:** Rate the degree to which you agree or disagree with each statement: 5-point Likert-type scales from 1 *"Strongly disagree"* to 5 *"Strongly agree"*	
	SUSE1	I am concerned that ESNs may use my personal information for other purpose without notifying me or getting my authorization.	Smith et al. (1996)
	SUSE2	When I give personal information to ESNs, I am concerned that apps may use my information for other purposes.	Smith et al. (1996)
Perceived Surveillance (SURV)	n/a	**Prompt:** Rate the degree to which you agree or disagree with each statement: 5-point Likert-type scales from 1 *"Strongly disagree"* to 5 *"Strongly agree"*	
	SURV1	I am concerned that ESNs are collecting too much information about me.	Xu et al. (2012)
	SURV2	I am concerned that ESNs may monitor my activities on my mobile device.	Xu et al. (2012)
Perceived Intrusion (INTR)	n/a	**Prompt:** Rate the degree to which you agree or disagree with each statement: 5-point Likert-type scales from 1 *"Strongly disagree"* to 5 *"Strongly agree"*	
	INTR1	I believe that as a result of my using ESNs, information about me that I consider private is now more readily available to others than I would want.	Xu et al. (2008)
	INTR2	I feel that as a result of my using ESNs, information about me is out there that, if used, will invade my privacy.	Xu et al. (2008)
Awareness of Privacy Practices (AWAR)	n/a	**Prompt:** Rate the degree to which you agree or disagree with each statement: 5-point Likert-type scales from 1 *"Strongly disagree"* to 5 *"Strongly agree"*	
	AWAR1	Organizations seeking information in ESNs should disclose the way the data is collected, processed and used.	Malhotra et al. (2004)
	AWAR2	It is very important to me that I am aware and knowledgeable about how my personal information will be used.	Malhotra et al. (2004)
Prior Privacy Experience (PEXP)	n/a	**Prompt:** Rate the degree to which you agree or disagree with each statement: 5-point Likert-type scales from 1 *"Strongly disagree"* to 5 *"Strongly agree"*	
	PEXP1	How often have you personally experienced incidents whereby your personal information was used by some company without your authorization?	Smith et al. (1996)
	PEXP2	How often have you personally been the victim of what was an improper invasion of privacy?	Smith et al. (1996)
Perceived Trust (TRUST)	n/a	**Prompt:** Rate the degree to which you agree or disagree with each statement: 5-point Likert-type scales from 1 *"Strongly disagree"* to 5 "*Strongly agree"*	
	TRUST1	ESN-provider would tell the truth and fulfil promises related to (the information) provided by me.	Malhotra et al. (2004)
	TRUST2	I trust that ESN-provider would keep my best interests in mind when dealing with (the information).	Malhotra et al. (2004)
Perceived Risk (RISK)	n/a	**Prompt:** Rate the degree to which you agree or disagree with each statement: 5-point Likert-type scales from 1 *"Strongly disagree"* to 5 "*Strongly agree"*	
	RISK1	In general, it would be risky to give (the information) to ESN-providers.	Malhotra et al. (2004)
	RISK2	There would be high potential for loss associated with giving (the information) to ESN-providers.	Malhotra et al. (2004)
Intention to Use ESNs (INT)	n/a	**Prompt:** Rate the degree to which you agree or disagree with each statement: 5-point Likert-type scales from 1 *"Strongly disagree"* to 5 "*Strongly agree"*	
	INT1	I am likely to disclose my personal information to use ESNs in the next 12 months.	Davis (1989)
	INT2	Given the opportunity, I will use Enterprise Social Networks.	Davis (1989)

	INT3	I am likely to use ESNs in the near future.	Davis (1989)
	INT4	I am willing to use ESNs in the near future.	Davis (1989)
Extraversion (EXT)	n/a	**Prompt:** Rate the degree to which you agree or disagree with each statement: 5-point Likert-type scales from 1 *"Does not apply to me at all"* to 5 "*Applies to me perfectly"*	
	EXT1	... is communicative, talkative.	Gerlitz & Schupp (2005)
	EXT2	... is outgoing, sociable.	Gerlitz & Schupp (2005)
	EXT3	... is reserved. [–]	Gerlitz & Schupp (2005)
Agreeableness (AGR)	n/a	**Prompt:** Rate the degree to which you agree or disagree with each statement: 5-point Likert-type scales from 1 *"Does not apply to me at all"* to 5 "*Applies to me perfectly"*	
	AGR1	... is considerate and kind to others.	Gerlitz & Schupp (2005)
	AGR2	... has a forgiving nature.	Gerlitz & Schupp (2005)
	AGR3	... is sometimes somewhat rude to others. [–]	Gerlitz & Schupp (2005)
Conscientiousness (CSC)	n/a	**Prompt:** Rate the degree to which you agree or disagree with each statement: 5-point Likert-type scales from 1 *"Does not apply to me at all"* to 5 "*Applies to me perfectly"*	
	CSC1	... does a thorough job.	Gerlitz & Schupp (2005)
	CSC2	... does things effectively and efficiently.	Gerlitz & Schupp (2005)
Neuroticism (NEU)	n/a	**Prompt:** Rate the degree to which you agree or disagree with each statement: 5-point Likert-type scales from 1 *"Does not apply to me at all"* to 5 "*Applies to me perfectly"*	
	NEU1	... worries a lot.	Gerlitz & Schupp (2005)
	NEU2	... gets nervous easily.	Gerlitz & Schupp (2005)
	NEU3	... is relaxed, handles stress well. [–]	Gerlitz & Schupp (2005)
Openness to Experience (OPEX)	n/a	**Prompt:** Rate the degree to which you agree or disagree with each statement: 5-point Likert-type scales from 1 *"Does not apply to me at all"* to 5 "*Applies to me perfectly"*	
	OPEX1	... is original, comes up with new ideas.	Gerlitz & Schupp (2005)
	OPEX2	... values artistic experiences.	Gerlitz & Schupp (2005)

	OPEX3	... has an active imagination.	Gerlitz & Schupp (2005)

APPENDIX B. VALIDITY AND RELIABILITY RESULTS

Convergent, discriminant, and internal consistency reliability

Table B.1 Outer model loadings to establish convergent validity

Latent construct	Items	Outer loading	t-statistics
Secondary Use of Personal Information (SUSE)	SUSE1	0.956***	68.745
	SUSE2	0.956***	69.894
Perceived Surveillance (SURV)	SURV1	0.891***	75.172
	SURV2	0.817***	19.060
Perceived Intrusion (INTR)	INTR1	0.884***	47.092
	INTR2	0.869***	34.557
Awareness of Privacy Practices (AWAR)	AWAR1	0.912***	11.078
	AWAR2	0.867***	6.995
Prior Privacy Experience (PEXP)	PEXP1	0.930***	44.565
	PEXP2	0.948***	80.160
Perceived Trust (TRUST)	TRUST1	0.936***	70.638
	TRUST2	0.925***	53.105
Perceived Risk (RISK)	RISK1	0.950***	87.122
	RISK2	0.947***	74.395
Intention to Use ESNs (INT)	INT1	0.867***	26.094
	INT2	0.933***	63.231
	INT3	0.917***	46.744
	INT4	0.875***	32.405

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$, (n/s) = not significant

Table B.2 Crossloadings

Items	AWAR	INT	INTR	PEXP	RISK	SURV	SUSE	TRUST
AWAR1	**0.9115**	-0.0454	0.2126	0.2332	0.1754	0.2831	0.1488	-0.1565
AWAR2	**0.8659**	-0.0486	0.0709	0.2091	0.1438	0.2966	0.1164	-0.1211
INT1	-0.0060	**0.8658**	-0.4427	-0.1991	-0.4578	-0.4670	-0.4990	0.3337
INT2	-0.0214	**0.9330**	-0.3835	-0.1987	-0.5537	-0.4919	-0.6233	0.4527
INT3	-0.0020	**0.9166**	-0.3754	-0.1894	-0.4777	-0.4455	-0.5752	0.4073
INT4	-0.1564	**0.8748**	-0.4360	-0.2091	-0.4531	-0.5607	-0.5644	0.3756
INTR1	0.2294	-0.3706	**0.8837**	0.4292	0.4624	0.7111	0.6151	-0.5190
INTR2	0.0585	-0.4294	**0.8693**	0.4440	0.6240	0.6138	0.5783	-0.6417
PEXP1	0.2379	-0.1594	0.4325	**0.9303**	0.5215	0.4417	0.3282	-0.5179
PEXP2	0.2315	-0.2509	0.4984	**0.9482**	0.5028	0.5573	0.4550	-0.5257
RISK 1	0.2409	-0.5222	0.5964	0.5408	**0.9496**	0.5843	0.7256	-0.7263
RISK 2	0.0999	-0.5057	0.5733	0.4905	**0.9465**	0.5373	0.6786	-0.7394
SURV1	0.2810	-0.5295	0.7710	0.4730	0.5733	**0.8631**	0.7499	-0.4865
SURV2	0.2757	-0.3953	0.4960	0.4436	0.4251	**0.8168**	0.5362	-0.4058
SUSE1	0.1367	-0.5754	0.6109	0.4409	0.7090	0.7394	**0.9561**	-0.5648
SUSE2	0.1513	-0.6319	0.6916	0.3652	0.7077	0.7215	**0.9562**	-0.6279
TRUST1	-0.1826	0.4240	-0.5646	-0.5983	-0.7460	-0.5288	-0.5906	**0.9357**
TRUST2	-0.1080	0.3904	-0.6675	-0.4287	-0.6898	-0.4453	-0.5691	**0.9245**

Table B.3 Results Summary for Reflective Measurement Models

Construct	Items	Convergent Validity				Internal Consistency Reliability		Discriminant Validity
		Loadings	t-statistics	Indicator Reliability (> 0.50)	AVE (> 0.50)	Composite Reliability (> 0.70)	Cronbach`s Alpha (> 0.60)	HTMT (confidence interval does not include 1)
Secondary use of personal information (SUSE)	SUSE1	0.956	68.745	0.914	0.914	0.955	0.906	Yes
	SUSE2	0.956	68.894	0.914				
Perceived Surveillance (SURV)	SURV1	0.891	75.172	0.794	0.731	0.844	0.636	Yes
	SURV2	0.817	19.060	0.667				
Perceived Intrusion (INTRU)	INTRU1	0.884	47.092	0.781	0.768	0.869	0.700	Yes
	INTRU2	0.869	34.557	0.755				
Awareness of privacy practices (AWARE)	AWAR1	0.912	11.078	0.832	0.790	0.883	0.737	Yes
	AWAR2	0.866	6.995	0.750				
Prior privacy experience (PEXP)	PEXP1	0.930	44.565	0.865	0.882	0.937	0.867	Yes
	PEXP2	0.948	80.160	0.899				
Perceived trust (TRUST)	TRUST1	0.936	70.638	0.876	0.865	0.928	0.844	Yes
	TRUST2	0.924	53.105	0.854				
	RISK1	0.950	87.122	0.903	0.899	0.947	0.888	Yes

Perceived risk (RISK)	RISK2	0.947	74.395	0.897				
Intention to use ESN (INT)	INT1	0.866	26.094	0.750	0.806	0.943	0.920	Yes
	INT2	0.933	63.231	0.870				
	INT3	0.917	46.744	0.841				
	INT4	0.875	32.405	0.766				

Table B.4 Collinearity Statistics

Latent construct	Items	VIF
Secondary Use of Personal Information (SUSE)	SUSE1	3.186
	SUSE2	3.186
Perceived Surveillance (SURV)	SURV1	1.278
	SURV2	1.278
Perceived Intrusion (INTR)	INTR1	1.405
	INTR2	1.405
Awareness of Privacy Practices (AWAR)	AWAR1	1.516
	AWAR2	1.516
Prior Privacy Experience (PEXP)	PEXP1	2.653
	PEXP2	2.416
Perceived Trust (TRUST)	TRUST1	2.144
	TRUST2	2.144
Perceived Risk (RISK)	RISK1	2.751
	RISK2	2.751
Intention to Use ESNs (INT)	INT1	3.181
	INT2	4.397
	INT3	3.881
	INT4	3.290

APPENDIX C. COMMON METHOD VARIANCE

As noted in our methodology section, we assess common method variance (CMV) ex ante and ex post in different ways. First, the item scales for measuring the different constructs (dependent and independent variables) were designed with careful wording mainly based on existing scales used in different previously validated studies (Chang et al., 2010). Furthermore, the survey items were presented in a randomized fashion and the questionnaire was designed in such way as to prevent participants from back-tracking to change their answers. Second, the dependent and independent variables were separated temporally (Lowry et al., 2015). Third, the confidentiality and anonymity of the study were guaranteed so the respondents do not feel it necessary to gauge the expectations of the survey administrators (Chang et al., 2010, Podsakoff et al., 2003). This methodological approach can ex ante reduce the probability of the consistency motive in participants' answers and theory-in-use biases (Chang et al., 2010; Pod-sakoff et al., 2003).

One first step ex post that we have taken to study whether CMV is present is to investigate whether the constructs in our model are highly correlated. Thus, we examine a correlation matrix of the constructs and to determine if any of the correlations were above 0.90, which would be evidence that CMV may exist (Pavlou et al., 2007). The observed correlation are significantly below the 0.90 threshold (see Table C.1.). Furthermore, a Harman single-factor test was employed (Podsakoff et al., 2003).

Table C.1 Correlations

Constructs	1	2	3	4	5	6	7	8
1. AWAR	0.8890							
2. INT	-0.0526	0.8980						
3. INTR	0.1668	-0.4553	0.8766					
4. PEXP	0.2495	-0.2218	0.4978	0.9393				
5. RISK	0.1808	-0.5422	0.6170	0.5442	0.9481			
6. SURV	0.3246	-0.5480	0.7571	0.5359	0.5918	0.8548		
7. SUSE	0.1506	-0.6314	0.6812	0.4215	0.7409	0.7639	0.9561	
8. TRUST	-0.1578	0.4384	-0.6602	-0.5555	-0.7729	-0.5253	-0.6237	0.9301

As an additional conservative check, we still test for common method variance by assessing the VIFs as described by Kock (2015). If they are greater than 3.3 at the factor-level then it is an indication of common method variance, because “a VIF greater than 3.3 is proposed as an indication of pathological collinearity, and also as an indication that a model may be contaminated by common method bias” (Kock, 2015, p. 7). If the VIF values are equal to or less than 3.3 at the factor-level then this is an indication of no common method variance. Now, there is no currently a way to mitigate common method variance in PLS software that we are aware of but there is a way at least identify it. In our model, we do not exceed this value, and given our care in survey design, common method bias in our model is not likely.

Table C.2 VIF values at the factor-level

Latent construct (dependent)	Latent construct (independent)	Inner VIF Values
Intention to Use ESNs (INT)	Privacy Concerns (PRIV)	2.502
	Perceived Risk (RISK)	3.143

	Perceived Trust (TRUST)	2.718
Perceived Risk (RISK)	Privacy Concerns (PRIV)	1.977
	Perceived Trust (TRUST)	1.977
Perceived Trust (TRUST)	Privacy Concerns (PRIV)	1.000

APPENDIX D. Mediation and Moderation Details

Mediation

To obtain further insight into the potential mediating effects we conducted a mediation analysis. Mediation focuses on the consideration of causal chains. A mediated (or indirect) effect is present if an independent variable (IV) X influences a dependent variable (DV) Y via the effect on a third variable (MV) Z. Therefore, the term mediator refers to variables that serve as a link between exogenous and endogenous variables, so that the exogenous variable first acts on the mediator, which then influences the endogenous variable. According to Dinev et al. (2013) "Mediation is useful when we need to explain how the IV–DV relationship can be statistically explained by the IV–Mediator–DV relationship (p. 314). A distinction must be made between full and partial mediation. In complete mediation, the effect of the exogenous variable on the endogenous variable occurs exclusively via the mediator, since a direct effect does not exist. Complete mediation can therefore be demonstrated if, after controlling the indirect effect of X via Z on Y, the direct effect of X on Y is no longer significant. In partial mediation there is both a direct effect and an indirect effect of the exogenous variable on the endogenous variable via the mediator, which means that there is a direct effect in addition to an indirect effect.

Table D.1 Direct effects

Direct effects	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P-Values
Privacy Concerns -> INT	-0.3674	-0.3855	0.1473	2.4946	0.0126
Privacy Concerns -> Risk	0.4087	0.4056	0.0945	4.3238	0.0000
Privacy Concerns -> Trust	-0.7030	-0.7047	0.0469	14.9795	0.0000

Risk -> INT	-0.3163	-0.2999	0.1806	1.7513	0.0800
Trust -> INT	-0.0644	-0.0618	0.1427	0.4512	0.6519
Trust -> Risk	-0.4855	-0.4890	0.0991	4.8989	0.0000

Table D.2 Total indirect effects

Indirect effects	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P-Values
Privacy Concerns -> INT	-0.1920	-0.1803	0.1245	1.5423	0.1231
Privacy Concerns -> Risk	0.3413	0.3461	0.0807	4.2310	0.0000
Trust -> INT	0.1536	0.1446	0.0945	1.6248	0.1043

Table D.3 Specific indirect effects

Specific indirect effects	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P-Values
Privacy Concerns -> Risk -> INT	-0.1293	-0.1204	0.0784	1.6488	0.0993
Trust -> Risk -> INT	0.1536	0.1446	0.0945	1.6248	0.1043
Privacy Concerns -> Trust -> Risk -> INT	-0.1080	-0.1032	0.0700	1.5416	0.1232
Privacy Concerns -> Trust -> INT	0.0453	0.0434	0.1019	0.4441	0.6570
Privacy Concerns -> Trust -> Risk	0.3413	0.3461	0.0807	4.2310	0.0000

Moderation

We tested for moderation of the significant relationship between privacy concerns and the behavioral intention to use ESNs by the Big Five personality traits (extraversion, agreeableness, neuroticism, and openness) using the two-stage approach (Chin et al., 2003). We choose this approach because the goal of our moderation test is to determine whether or not the personality traits (moderators) exerts a significant effect on the relationship between privacy concerns and the behavioral intention to use ESNs. Before we did the analysis, we checked again divergent and convergent quality to establish factorial validity after adding the Big Five personality traits to our model. To evaluate convergent validity we considered the outer loadings which should be reasonably high (> 0.500) and the t-values of the personality traits constructs and the AVE. Because of weak reliabilities in the indicators we were not able to test conscientiousness (cf. Table D.4.).

Table D.4 Validity and reliability details – personality trait constructs

Construct	Items	Convergent Validity			Internal Consistency Reliability		Discriminant Validity
		Loadings	**t-statistics**	**AVE** (> 0.50)	**Composite Reliability** (> 0.70)	**Cronbach`s Alpha** (> 0.60)	**HTMT (confidence interval does not include 1)**
Extraversion (EXTRA)	EXTRA1	0.850	4.017	0.834	0.937	0.913	Yes
	EXTRA2	0.928	5.190				
	EXTRA3	0.957	4.758				
Agreeableness (AGREE)	AGREE1	0.998	3.514	0.723	0.834	0.835	Yes
	AGREE2	0.670	2.168				
	AGREE3	(d)The indicator AGREE 3 was also lower than desired loadings. This indicator was therefore not taken into account in the further analysis.					
Neuroticism (NEURO)	NEURO1	0.649	2.174	0.689	0.810	0.645	Yes
	NEURO2	0.978	2.775				
	NEURO3 (d)	(d)The indicator NEURO 3 was also lower than desired loadings. This indicator was therefore not taken into account in the further analysis.					
Openness (OPEN)	OPEN1	0.972	12.053	0.700	0.873	0.793	Yes
	OPEN2	0.654	3.919				
	OPEN3	0.902	4.758				
Conscientiousness (CON) (d)	(d) All of the conscientiousness indicators had low loadings that were not significant. Accordingly, we dropped the entire conscientiousness construct to address this issues → Dropped to improve convergent validity.						

Convergent validity can be established when the indicator loadings are reasonably high (> 0.500) and the t-values of the loadings are significant.

The results of our analysis are detailed in Table D.5. for each interaction examined in our model, and show that none of the personality traits moderates the relationship between privacy concerns and the behavioral intention to use ESNs. As mentioned before, we were not able to test conscientiousness.

Table D.5 Results moderation analysis

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P-Values
Moderating Eff. (Extraversion) -> INT	0.0575	0.0427	0.1169	0.4920	0.6227
Moderating Eff. (Agreeableness) -> INT	-0.1213	-0.1153	0.0868	1.3975	0.1623
Moderating Eff. (Openness) -> INT	0.1081	0.1113	0.0990	1.0922	0.2748
Moderating Eff. (Neuroticism) -> INT	-0.1571	-0.1264	0.1024	1.5346	0.1249

Table D.6 Bootstrapping – CI Test for Moderation of Privacy Concerns → INT by Personality

Interaction	2.5% lower bound	97.5% upper bound	Zero included?	Support?
Privacy Concerns * Extraversion → INT	-0.1615	0.3022	Yes	No
Privacy Concerns * Agreeableness → INT	-0.3043	0.0325	Yes	No
Privacy Concerns * Openness → INT	-0.0930	0.2972	Yes	No
Privacy Concerns * Neuroticism → INT	-0.3614	0.0314	Yes	No

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Declarations of interest: none